

# HOME NURSING



HOME  
NURSING

4th  
EDITION

S. J. A. A.







# HOME NURSING

THE AUTHORIZED TEXTBOOK  
OF THE  
**ST. JOHN AMBULANCE ASSOCIATION**

BEING THE AMBULANCE DEPARTMENT OF  
**The Grand Priory in the British Realm of the  
Venerable Order of the Hospital of St. John of Jerusalem**

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## P R E F A C E

At the request of the Ambulance Committee of the Order of St. John, we have undertaken the revision of the Home Nursing Textbook of the St. John Ambulance Association, which was originally compiled by a Committee from the manuscript of the late Mildred Heather-Bigg. We have re-arranged and largely re-written the manual, and in bringing it up to date we have had the assistance of Miss Gullan, Sister-Tutor at St. Thomas's Hospital, to whom we are deeply grateful. We also wish to thank others for the many valuable suggestions they have made.

We have endeavoured to simplify the book and have omitted matter such as the feeding of infants, which seemed to us to be outside the sphere of the Home Nurse, and we have included new matter which we hope will be of service.

The general principles of Home Nursing have been strictly adhered to, but where climatic or other conditions do not permit of their being strictly observed, Surgeon Instructors and Trained Nurses should experience no great difficulty in modifying the teaching in the manner most suited to the actual circumstances or local conditions.

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*June, 1933*

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of men and women.

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II.—Structure and Functions of the Body.

III.—The Roller Bandage.

Practical Work —Roller Bandaging.

SECOND LECTURE.

Chapter IV.—The Sick-room ; choice, preparation, cleaning and lighting.

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VI.—The Bed ; Beds for special cases.

VII.—Nursing Requisites.

VIII.—Daily Routine ; Washing the Patient ; Pulse ; Respiration ; Temperature.

Practical Work—Bed-making, Changing sheets. Roller Bandaging.

THIRD LECTURE.

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„ X.—Food ; Digestion and the Digestive System ; Milk ; Diets ; Serving Food.

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Practical Work—Taking and Recording  
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Chapter XII.—Methods of Treatment ; Removing or  
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FIFTH LECTURE.

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„ XV.—Specific Infectious Diseases.

Practical Work — Making solutions.  
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SIXTH LECTURE.

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Antiseptics ; Operations ; After-care ;  
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„ XVII.—Sick Children ; Common Ailments.

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## INTRODUCTION

THE St. John Ambulance Association is a Foundation of the Grand Priory in the British Realm of the Venerable Order of St. John, and came into existence in 1877 with the object of teaching persons how to act in cases of injury or sudden illness. The instruction was originally confined to First Aid to the Injured, but it soon became apparent that even an elementary knowledge of the art of nursing would prove of much service, especially in cases of accident or illness treated in a private house when the services of a trained nurse are not available.

In 1880, therefore, the Association introduced a syllabus of instruction in nursing which was described as the "Second or Advanced Course," and no persons were allowed to be examined in the subject unless they held a First Aid Certificate. Although this rule has since been rescinded, students will be well advised to observe it.

The course was at first restricted to women, and on the establishment of the St. John Ambulance Brigade in 1887 the possession of the Certificate was a necessary qualification for enrolment in a Nursing Division. In 1893 it was extended to men, and it is now compulsory for them to obtain the Home Nursing Certificate

if desirous of joining the Royal Naval Auxiliary Sick Berth Reserve or the Military Hospitals Reserve, both of which were established in 1900.

The first manual for the course, written by the late Dr. E. MacDowell Cosgrave, appeared in 1880 and was styled "Hints and Helps for Home Nursing and Hygiene." It was revised by a Committee in 1908 and by the late Miss Mildred Heather-Bigg in 1918, when the title was changed to "Home Nursing."

The Textbook includes a Glossary which contains an explanation of technical terms and other words used in Nursing. In many instances more than the mere meaning of a word is given in the Glossary so as to explain technical matters unsuitable for inclusion in the general text of the book. The Glossary will be found particularly useful to those members of the St. John Ambulance Brigade in the Reserves mentioned above while carrying out their training in hospitals, and to members of Nursing Divisions of the Brigade who take advantage of the facilities offered by a number of hospitals in London and elsewhere to obtain experience in nursing the sick and injured.

- 1st Edition—"Hints and Helps for  
Home Nursing and Hygiene,"  
by E. McDOWEL COSGRAVE, M.D. 1880
- 2nd Edition—Ditto Revised by a Com-  
mittee - - - - - 1908
- 3rd Edition—"Home Nursing," by  
MILDRED HEATHER-BIGG - - 1918
- 4th Edition—Ditto Revised by a Com-  
mittee - - - - - 1932

## CHAPTER I

## THE HOME NURSE

## DEFINITION OF HOME NURSING

HOME NURSING is the care of a case of accident or illness at home under the supervision of a doctor. Settling the plan of treatment rests entirely with the doctor, while carrying out that plan rests to a great extent with the nurse. Home Nursing is therefore quite distinct from First Aid, which may here be defined as the rapid diagnosis and immediate treatment on the spot of a case of accident or sudden illness pending the arrival of a medical man.

The concluding chapter in the textbook FIRST AID TO THE INJURED, published by the St. John Ambulance Association, sets out briefly the preparations to be made at home for dealing with the reception of accident cases, and may be regarded as a connecting link with this manual.

## NECESSARY QUALIFICATIONS OF THE NURSE

In order to render efficient assistance at home, a nurse must be **reliable** in carrying out instructions given to her by the doctor, **conscientious** in the performance of her duties, and **observant**



that she may notice changes in the patient's condition and thus render accurate reports to the doctor. She must be **loyal** to the doctor by saying or doing nothing to lessen the patient's confidence in him, and loyal to the patient by carrying out the instructions of the doctor with true regard to the patient's welfare. She must exercise perfect **self-control** and **tact**, and be **resourceful** in an emergency without alarming the patient. She must be **sympathetic** that she may give real comfort and encouragement to the patient and must carry out her duties cheerfully and with good temper. Thus she will merit and gain the confidence of the doctor, without which the work that both are equally anxious to make as perfect as possible in the best interests of the patient cannot be done harmoniously.

**Sources of worry to the patient are :—**

1. **Noisiness.** Creaking boots, clattering heels, slamming doors, rattling crockery, standing at the foot of the bed and shaking it, talking just outside the door, and mending the fire noisily are amongst the most obvious faults of a bad nurse. With a noisy nurse the patient is kept constantly on tenterhooks dreading the next disturbance.

2. **Ostentatious quietness.** This, to many patients, is more irritating than noise. A cat-like

tread keeps the patient wondering in what part of the room the nurse will next appear. Whispering makes a sick person strain to hear what is being said. It is infinitely preferable to speak in low, but distinctly audible, tones.

3. **Fussiness.** Talk about trifling matters that should be settled in silence, and pronounced hurry are very trying; while continual shifting of pillows and bedclothes, constant inquiries as to the patient's feelings, and visits on tip-toe to see if he is asleep are most wearisome.

#### PERSONAL HYGIENE

It is important that habits of personal hygiene be cultivated, for, if disregarded, ill-health will limit the nurse's powers of being helpful to her charge.

Rest, exercise and recreation in the fresh air are essential and should be varied as much as possible. Work should be so arranged as to permit of seven hours' sleep daily and reasonable time for meals, which should be taken at intervals of not more than four and a half hours and never in the sick-room.

A warm bath should be taken daily: if this is impossible, a sponge down from head to foot followed by a vigorous rub will be a useful substitute.

Special attention should be paid to the nails, which must be kept short and clean. The hands should be examined for cuts and cracks which, if present, should be painted with mild tincture of iodine and covered with a dressing. The teeth should be kept in a healthy condition and cleansed night and morning. Regular habits should be cultivated as a guard against constipation.

Clothing should be light and washable and should not impede the movements of the body. A white overall and a white cap are most desirable.

## QUESTIONS ON CHAPTER I

*The numerals indicate the pages where the answers may be found.*

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## CHAPTER II

**STRUCTURE AND FUNCTIONS OF  
THE BODY**

THE nurse should know something about the structure of the body, and the manner in which its various organs co-operate in the maintenance of life and promotion of health.

**STRUCTURE OF THE HUMAN BODY**

**The Body** consists of the head, the trunk, and the limbs. It is built upon a bony framework (the skeleton), which, besides forming a framework for the body, affords support to the soft parts, protects or helps to protect the vital organs, and provides attachment for the muscles, which make movement of the whole body and of its parts possible.

The vital organs of the body are for the most part enclosed within cavities—the Cerebro-spinal Cavity, the Chest (Thorax), and the Abdomen.

**The Cerebro-spinal Cavity** is within the brain-case (cranium) and the spine. The brain is contained in the cranium, and is continuous through a large opening in the base of the skull

with the spinal cord, contained in the spinal canal.

**The Thoracic Cavity** occupies the upper third of the trunk, and is bounded at the back, sides, and front, by the twelve thoracic vertebræ, the ribs, the rib cartilages, and the breast-bone (sternum); above by muscles at the root of the neck; below by the diaphragm, which separates it from the abdomen. The Thoracic Cavity contains the lungs, the heart, and the great blood-vessels connected with and adjacent to it, the greater part of the windpipe (trachea), of the gullet (œsophagus), of the thoracic duct, and certain large nerves and masses of nerve tissue (ganglia)—(part of the Sympathetic System).

**The Abdominal Cavity** occupies the lower two-thirds of the trunk. It is bounded above by the diaphragm and lower ribs, and below by the pelvic bones and the perineum; behind by the lumbar vertebræ; at the sides and in front by the abdominal muscles. The cavity contains the stomach, large and small intestines, liver, spleen, pancreas, kidneys, ureters, and bladder; also, in females, the uterus and ovaries. There are also in the cavity large blood-vessels, the lower part of the thoracic duct and certain large nerves and ganglia (part of the Sympathetic System).

## HOW LIFE IS MAINTAINED

During life some part of the body is ever working, either obviously when the voluntary muscles are in action, as in manual work, walking or any form of physical exercise ; or less appreciably, as in mental work, respiration, digestion and circulation.

This work involves a loss or expenditure of material in the cells (of which the body, its organs and its tissues are composed), a giving-off of heat, and production of waste matter. There is thus, with each bit of work which the body or any of its organs may perform, a chemical process (metabolism) continually going on, resulting in the death of the cells. These cells must be replaced, and the process of replacement is analogous to that of a fire burning. The fire requires fuel to burn and so heat is produced. If fresh fuel is not supplied the fire goes out : if the ashes are not removed the fire is choked. So in bodily action of any kind there is loss of material which must be replaced, loss of heat which must be made good ; fuel to provide energy must be supplied and the waste products must be removed.

The fuel and new material are derived from food taken and rendered capable of assimilation by the digestive system ; the heat is produced

by oxygen derived from the air through the lungs; and the waste products are removed through the excretory organs, the skin, lungs, kidneys and bowels.

**The great carrier is the blood** circulating throughout the body. It conveys the nourishment from the stomach and bowels and the oxygen from the lungs to all parts of the body, and also the waste products and carbonic acid gas to the organs of excretion.

The whole of the body is covered by the skin, which consists of an outer layer (cuticle or epidermis), and a deeper layer—the true skin—(dermis). Under this lie the subcutaneous tissue and fat in which are found the sweat glands. These secrete fluid, chiefly water, from the tissues and discharge it through the pores of the skin in the form of perspiration, which plays an important part in the regulation of the temperature of the body.

**The controlling influence** which governs the regular working of the body and its organs is **the nervous system**.

#### THE CIRCULATION OF THE BLOOD

The circulation of the blood is carried out by the heart and the blood-vessels—arteries, capillaries and veins.

**The Heart** is a hollow muscular organ situated within the cavity of the chest, with three-quarters of its bulk to the left of the middle line. It is divided by a partition into the right and left sides so completely that there is no direct communication between them.

There are two distinct parts of the circulation of the blood—the General or Systemic Circulation and the Lung or Pulmonary Circulation.

**The Systemic Circulation.** Blood is forced from the left side of the heart through the aorta, the great central artery of the body, which divides and subdivides to form branches for conveying blood to all parts of the body. The walls of arteries are muscular and elastic, and owing to this these vessels are endowed with the power of dilation and contraction. As the branches of the aorta subdivide they become smaller and smaller, until they are so small as only to be visible with the aid of a microscope. They have now become capillaries—very small vessels, whose walls are so thin as to permit of an interchange of fluids and gases between the blood and the tissues. It is by means of this interchange that food and oxygen reach the tissues, and waste products reach the blood. The effect of this interchange upon the blood is to render it impure and to change its colour from bright to dark red.



The capillaries unite to form veins, which become larger and larger by joining each other, and eventually reach the right side of the heart through two large veins—the superior vena cava and the inferior vena cava. The former collects blood from the veins of the upper part, and the latter from the lower part, of the body.

**The Pulmonary Circulation.** It is now necessary for the blood to get rid of heat, carbonic acid gas and other waste matter which it has received, and to obtain a fresh supply of oxygen. To do this it is carried by the pulmonary arteries to the lungs. These arteries divide and subdivide to form capillaries, through the thin walls of which an interchange takes place, the blood giving up heat, carbonic acid gas and water, and receiving oxygen. The capillaries now join to form veins, which become larger and larger by uniting with each other, and eventually reach the left side of the heart as the pulmonary veins. These veins contain blood, bright red in appearance and suitable in every way to do its work in the capillaries of the Systemic Circulation.

#### THE NERVOUS SYSTEM

The whole work of the body is regulated by two systems of nerves, the Cerebro-spinal and the Sympathetic.

**The Cerebro-spinal System** comprises the Brain and the Spinal Cord as its central organs, from which pearly white threads, called nerves, proceed to all parts of the body. The Brain is the seat of the will, intellect and sensation ; the spinal cord and nerves are the channels through which sensory impulses are conveyed from the body to the brain, and motor impulses from the brain to the body.

**The Sympathetic System** consists of two chains of nerve centres (ganglia), extending, one on each side, along the entire length of the front of the vertebral column, and sending off branches to all the organs of the thorax and abdomen as well as to the blood-vessels. This system acts independently of the will, and, by controlling the involuntary muscles, regulates the vital functions and the temperature of the body.

## QUESTIONS ON CHAPTER II

*The numerals indicate the pages where the answers may be found.*

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## CHAPTER III

THE ROLLER BANDAGE AND ITS  
APPLICATION

## THE ROLLER BANDAGE

ROLLER bandages are made of woven cotton, domette, flannel, or of other suitable material. They are of various widths for different parts of the body, and are usually 6 yards in length.



*Fig. 1.*—ROLLER BANDAGE MACHINE.

They may be rolled by hand or by means of a machine (*Fig. 1*). When a bandage is partly unrolled the roll is called the head, and the unrolled part the free end.

### USES OF THE ROLLER BANDAGE

Roller bandages are used :—

1. To retain splints or dressings in position.
2. To afford support.
3. To make pressure and so reduce or prevent swelling.
4. To drive blood from the part of the body bandaged, as in the case of extreme collapse from hæmorrhage.

### GENERAL RULES FOR APPLICATION

1. See that the bandage is tightly and evenly rolled before attempting to use it.
2. Apply the outer side of the free end to the part.
3. Never allow more than a few inches of the bandage to be unrolled at a time.
4. Bandage from below upwards, and from within outwards, over the front of a limb.
5. Apply each layer of the bandage so that it covers two-thirds of the preceding one.
6. Apply the bandage firmly and evenly, but not tightly enough to stop the circulation. If the edges turn up on passing the hand over them, the bandage is too loose. If, after the bandage is taken off, red lines are seen, it has not been evenly applied.
7. Fix the bandage securely when finished.

## METHODS OF APPLICATION

There are four principal methods of applying the roller bandage :—

1. **The simple spiral**, which is made by encircling the part with the bandage several times.

This should only be used when the part to be bandaged is of uniform thickness, as, for instance, the finger, or wrist and a short portion of the forearm above it.

2. **The reverse spiral**, which is made by a number of spiral turns in which the bandage is reversed downwards upon itself at each circuit of the limb.

This is used in bandaging parts of the limbs where owing to their varying thickness it is impossible to make a simple spiral lie properly. (*See Fig. 10*).

3. **The figure of 8**, which is applied by passing the bandage obliquely round the limb, alternately upwards and downwards, the loops resembling the figure 8.

It is used for bandaging at or in the neighbourhood of a joint such as the knee or elbow. It may also be used instead of a reverse spiral for a limb.

4. **The spica**, which is a modified figure of 8 used for bandaging the shoulder, groin or thumb. (*See Figs. 6 and 7.*)

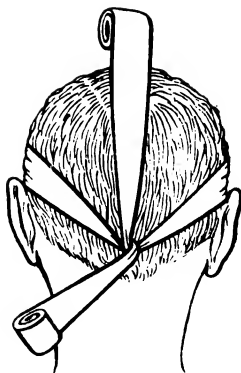
When the methods of bandaging are understood, no difficulty should arise in covering any part of the body. The points to which attention should be directed are evenness and firmness of application rather than a completed bandage corresponding exactly with the illustration. It will, in fact, be found that differently shaped limbs require slight modifications of the bandage.

No matter what is the actual position of a person, for purposes of description the body is supposed to be erect with the arms hanging by the side and the palms of the hands directed forwards.

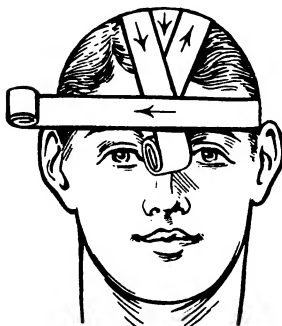
#### APPLICATION TO VARIOUS PARTS

**Capeline Bandage for Head.**—Take two  $2\frac{1}{2}$ -inch bandages and join the free ends. Standing behind the patient, who should be seated, apply the join to the middle of the forehead just above the eyebrows, heads of the bandage inwards. The bandage in the right hand is called the vertical bandage, and that in the left hand is called the horizontal bandage. Bring both rolls to the back of the head and cross them (*Fig. 2*). Carry the vertical bandage forwards over the head, and the horizontal bandage round the head and over the vertical bandage in front.

*Fig. 3* shows the vertical bandage carried twice forwards and once backwards.) Continue to pass the vertical bandage backwards and forwards, each time a little to the left and right alternately, locking it with the horizontal bandage. Finally, pass the horizontal bandage twice round the head, and pin in front (*Fig. 4*).



*Fig. 2.*



*Fig. 3.*

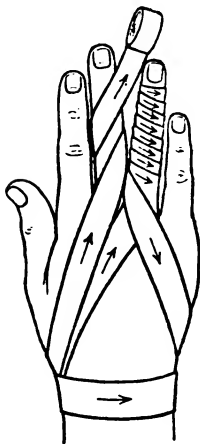


*Fig. 4.*

*Figs. 2-4.*—CAPELINE BANDAGE FOR HEAD.



**Simple Spiral for the Fingers.**—*Width of bandage* 1 inch. *Course.*—From inner to outer side of front of wrist, a sufficient length being left for tying; across back of hand to inner



**Fig. 5.—SIMPLE SPIRAL  
FOR THE FINGERS.**

side of finger to be first bandaged (taking the fingers in order from the little finger side), by one spiral to root of finger nail; round finger by simple spirals; thence to root of little finger and round wrist, continuing to the next finger, if necessary. When completed tie to free end left for the purpose. (*Fig. 5.*)

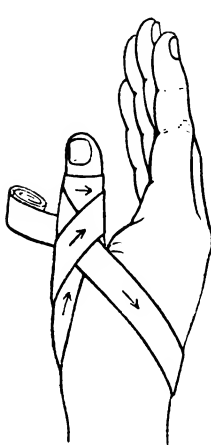
**Spica for the Thumb.**

—*Width of bandage*, 1 inch. *Course.*—Across front of wrist from inner to outer side; up between thumb and finger by one spiral to root of thumb nail; simple turn round thumb;

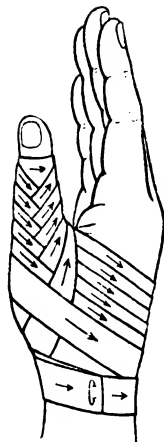
diagonally across back of thumb and hand to wrist; continue by figure of 8 round thumb and wrist until the thumb is covered.

Finish by a turn round wrist and secure.  
(Figs. 6 and 7.)

**Bandage for the Hand.**—*Width of Bandage,*



*Fig. 6.*

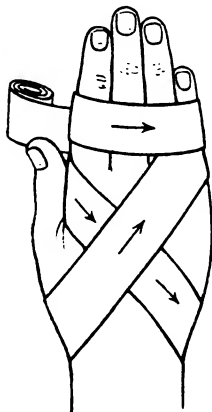


*Fig. 7.*

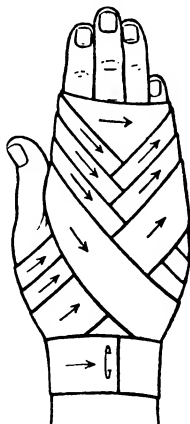
**Figs. 6, 7.**—**SFICA FOR THE THUMB.**

2 or 2½ inches. *Course.*—From between thumb and finger across back of hand, front of wrist and back of hand to fourth finger nail; once

round fingers (*Fig. 8*). Figure of 8 round hand and wrist. Repeat figures of 8 until the hand is covered, then round wrist and secure (*Fig. 9*).



*Fig. 8.*

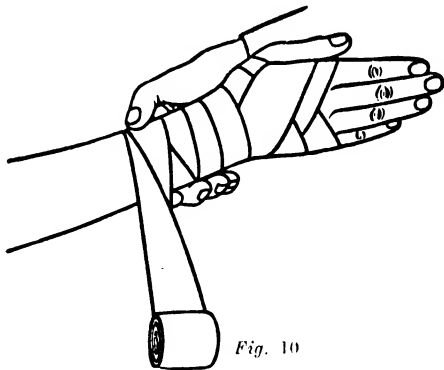


*Fig. 9.*

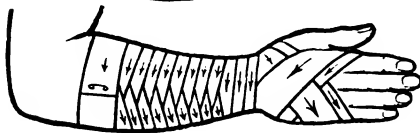
*Figs. 8, 9.*—BANDAGE FOR THE HAND.

**Reverse Spiral for the Forearm.**—*Width of bandage*, 2 or  $2\frac{1}{2}$  inches. *Course*.—Across front of wrist from inner to outer side; across back of hand to first joint of little finger; across front of fingers; to inner then outer side of

wrist. Repeat once. Two or three simple spirals round wrist. Reverse spirals on forearm and secure. (*Figs. 10 and 11.*)



*Fig. 10*



*Fig. 11.*

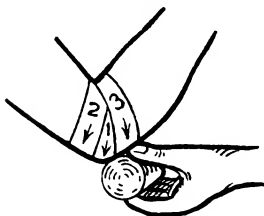
*Figs. 10, 11.*—REVERSE SPIRAL FOR THE FOREARM.

The figure of 8 bandage, as for the leg (*see page 35 and Fig. 24*), may be applied instead of the spiral.

**Figure of 8 for Elbow, Knee and Ankle.**—*Width of bandage, 3 inches. Course.*—Round

the joint and then figure of 8 alternately above and below joint (*Figs. 12 and 13*). Secure.

**Spica for the Shoulder (left).**—*Width of bandage.* 3 inches. *Course.*—Secure the free end round the arm. Thence from inner side of left arm, over the front of the arm, across the back, under the right armpit, across the chest to



*Fig. 12.*



*Fig. 13.*

*Figs. 12, 13.*—FIGURE OF 8 BANDAGE FOR ELBOW, KNEE AND ANKLE.

the outer side of the arm, across the back of the arm. (*Fig. 14.*) Repeat until the part is sufficiently covered and secure. (*Fig. 15.*)

**Bandage for the Breast (right).**—*Width of bandage,* 3 inches. *Course.*—From left side of back of waist ; round waist ; under right breast ; over left shoulder to right side of waist (*Fig. 16*) : round waist ; repeat until the breast is sufficiently covered and supported (*Fig. 17*). Secure.

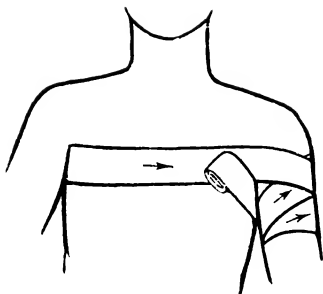


Fig. 14.

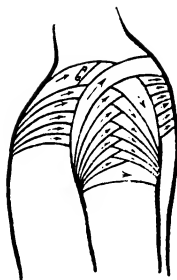


Fig. 15.

*Figs. 14, 15.*—SPICA FOR THE SHOULDER.

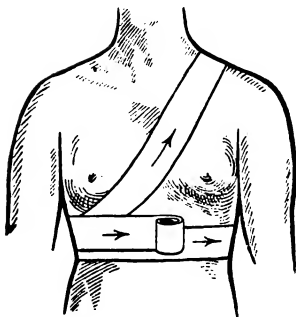


Fig. 16.

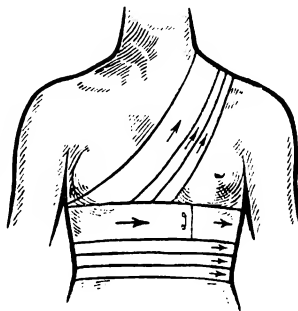


Fig. 17.

*Figs. 16, 17.*—BANDAGE FOR THE BREAST.

**Bandage for Both Breasts.**—*Width of bandage*, 3 inches. *Course*.—From right side of back of waist, round waist, up over front of left shoulder to right side of waist, round waist, over back of right shoulder to left side of waist, and round waist (*Fig. 18*). Repeat alternately over the left and right shoulders until both breasts are covered and supported (*Fig. 19*). Secure.

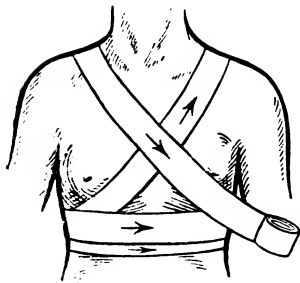


Fig. 18

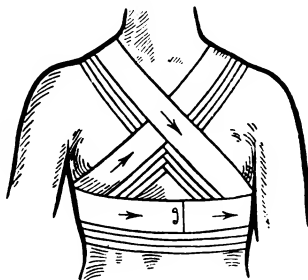


Fig. 19.

Figs. 18, 19.—BANDAGE FOR BOTH BREASTS.

**Spica for (right) Groin or Hip.**—*Width of bandage*, 3 inches. *Course*.—Two turns round the thigh to fix the bandage. From fork to crest of right hip ; across loins to left hip ; thence to outer side of and behind right thigh. Repeat

until the groin is sufficiently covered and secure.  
(Figs. 20 and 21.)

**Bandage for the Foot.**—*Width of Bandage*,  $2\frac{1}{2}$  inches. *Course.*—From inner side of ankle, over foot to root of fifth toe; round foot; two or three reverse spirals round foot; figures of 8

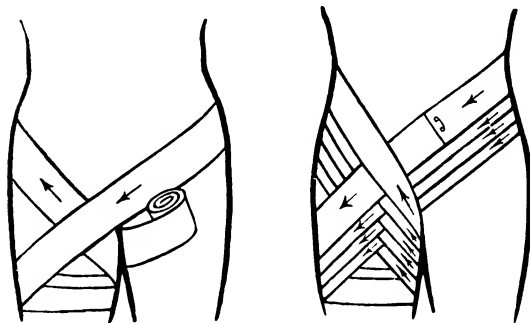


Fig. 20.

Fig. 21.

Figs. 20, 21.—SPICA FOR GROIN OR HIP.

round the ankle and foot until the part is sufficiently covered; once round ankle, and secure.  
(Figs. 22 and 23.)

**Figure of 8 Bandage for the Leg.**—*Width of bandage*, 3 inches. *Course.*—From inner side of ankle to outer side of foot, round foot; round



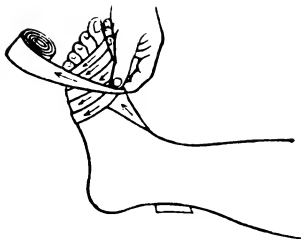


Fig. 22.

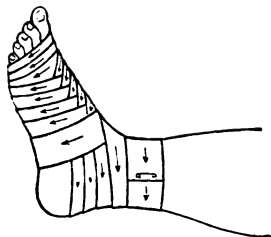
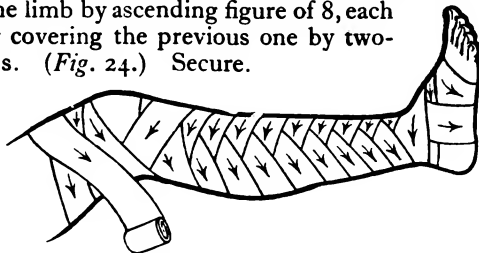


Fig. 23.

*Figs. 22, 23.*—BANDAGE FOR THE FOOT.

ankle ; again round foot and ankle ; and thence up the limb by ascending figure of 8, each layer covering the previous one by two-thirds. (*Fig. 24.*) Secure.



*Fig. 24.*—FIGURE OF 8 FOR THE LEG.

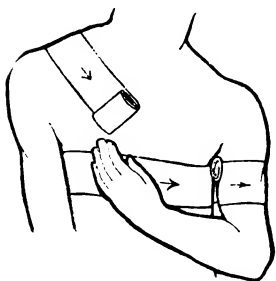
The reverse spiral, as for the forearm, may be applied instead.

### **Bandage for a Broken Collar-bone.—**

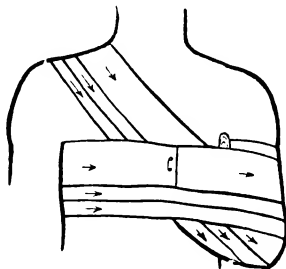
1. Place in the armpit a pad, about two inches thick and four inches across.

2. Pass the end of a 4-inch bandage round the upper part of the arm to form a loop, and secure with a safety pin.

3. Carry the bandage across the patient's back a little below the armpits to draw the shoulder back, and continue it round the chest to the armpit on the injured side.



*Fig. 25.*



*Fig. 26.*

*Figs. 25, 26.*—BANDAGE FOR A BROKEN COLLAR-BONE.

4. Raise the forearm well up.

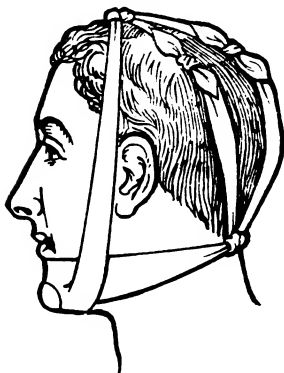
5. Carry the bandage diagonally across the back and over the uninjured shoulder (*Fig. 25*) and round the elbow three times to raise the shoulder and support the forearm.

6. Pass the bandage three times round the

body and lower end of the arm to lever out the shoulder.

7. Secure with a safety pin (*Fig. 26*).

**Bandage for the Jaw.**—Take one yard and a half of a 3-inch bandage. Cut a small hole in the centre, and tear the bandage from each end



*Fig. 27.*—BANDAGE FOR  
THE JAW.



*Fig. 28.*—BANDAGE FOR  
THE HEAD.

down the middle to within  $1\frac{1}{2}$  inches of the hole, thus producing a bandage with four tails. Apply as shown in *Fig. 27*.

**Bandage for any part of the Head.**—To make the bandage, take a piece of calico about

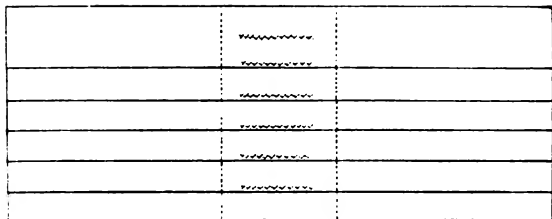
2 inches wide and 2 feet 6 inches long. Tear the bandage down the middle from each end, leaving about 12 inches untorn. Apply as *Fig. 28*. This bandage, having four tails, may be applied on the same principle to the forehead or dome of the head.

#### MANY-TAILED BANDAGES

These bandages may be made of domette, flannel, linen or other suitable material.

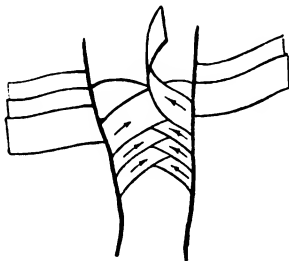
A piece of material long enough to go one and a half times round the limb, and in width sufficient to cover the dressing on the wound, may be torn from each end in parallel strips of equal width towards the centre, which remains undivided : the strips must be equal to each other in width, which will vary from 2 to 4 inches according to the part to be bandaged.

An alternative method of making the many-tailed bandage is to lay strips of suitable material parallel to each other, each overlapping one-third of the preceding one : the strips may then be sewn together for a short distance on either side of their centres or to a similar piece of material laid across the centres of the strips. (*Fig. 29.*)



*Figs. 29.*—MANY-TAILED BANDAGE.

The chief advantage of the many-tailed bandage is that a wound can be examined or a dressing changed without undue disturbance of the patient (*Fig. 30*).



*Fig. 30.*—MANY-TAILED BANDAGE.

**Many-tailed Bandage for Stump of Limb.**  
 —Make the bandage as *Fig. 31*, from 3-inch calico, and apply as *Fig. 32*.

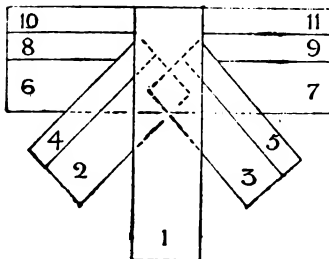


Fig. 31.

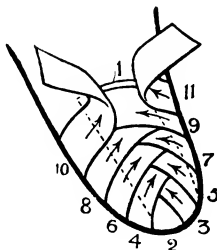


Fig. 32.

**Figs. 31, 32.—MANY-TAILED BANDAGE FOR STUMP OF LIMB.**

## QUESTIONS ON CHAPTER III

*The numerals indicate the pages where the answers may be found.*

	PAGE
Of what materials may roller bandages be made ?	23
When a bandage is partly unrolled which is the head and which is the free end ? .. ..	23
What are the uses to which the roller bandage may be put ? .. ..	24
Which side of the bandage should be applied to the body ? .. ..	24

	PAGE
In which directions would you bandage ? ..	24
What is the test for the correct degree of tightness ? .. .. .	24
How can you tell if a bandage has been evenly applied ? .. .. .	24
What are the methods of application ? ..	25
What are the points in the application of the roller bandage to which special attention should be given ? .. .. .	26
What is supposed to be the position of the body for the purpose of description ? .. ..	26
If a person raises his arm above his head, which is considered to be the upper part of that limb ? (Answer : The shoulder) .. ..	
How would you make a many-tailed bandage ?	39

## CHAPTER IV

**THE SICK-ROOM**

## ITS CHOICE AND PREPARATION

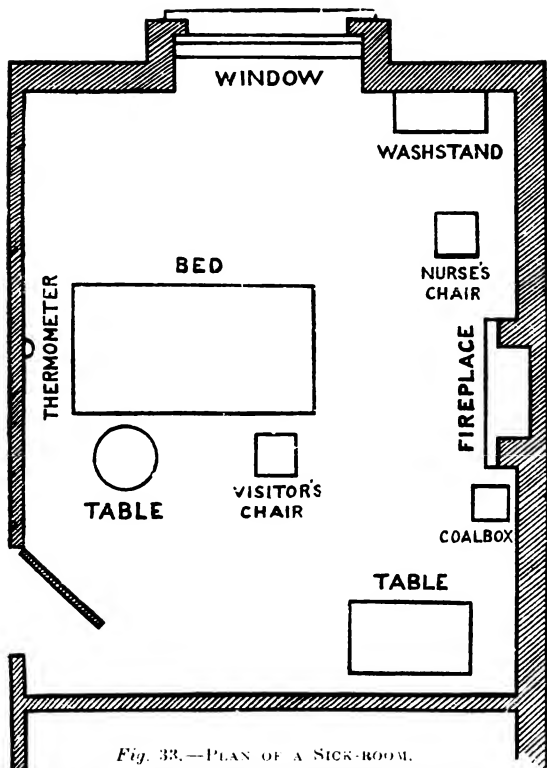
THE room should be large, airy, provided with a fireplace and, if possible, sash windows to ensure efficient ventilation. In private houses the choice is necessarily limited, but a cheerful sunny aspect is desirable. The patient's own room is the best if it fulfils these requirements.

It is an advantage when the sick-room opens on to a square landing, or communicates with a smaller room. Here should be a table specially reserved for nursing requisites and the prescribed nourishment for the night. This allows of all the sick-room requisites being kept close at hand but out of sight, and greatly assists in keeping milk and other food fresh and sweet.

Bed-pans and urinals should be kept in the lavatory.

Everything unnecessary in a sick-room should be removed. The essentials will consist of a bed, two tables, a couple of ordinary chairs, and an easy chair, perhaps a sofa, a screen and a couple of rugs (*Fig. 33*). Flowers (to be removed at night) and pictures often give much pleasure to the patient.





## CLEANING AND DUSTING

Having emptied the room as far as expedient, proceed with the cleaning.

If there is sufficient time the chimney should be swept and a fire lighted before the cleaning is started. A vacuum cleaner should be used if available. Dusting should be done with a cloth dampened with a disinfectant such as Lysol (one tablespoonful to a quart of water) and finished with a dry duster. Brushes merely flick the dust about and are therefore harmful.

The walls must be carefully swept down with a long broom having a damp cloth tied over the bristles. All curtain-poles, blinds, tops and ledges of windows and doors, and tops of all wardrobes and other heavy, immovable furniture, must be similarly treated. Communicating doors that have been kept shut for any length of time should be opened, the hinges and locks oiled, and the sides and tops well wiped down with damp dusters constantly wrung out in the disinfectant, which should be changed frequently.

## LIGHTING

Electric light is undoubtedly best of all artificial lights as it does not vitiate the air, as do gas, candles and lamps. Lights of all kinds

should be shaded, so that they do not shine directly on the patient's eyes. When little light only is required, a night-light, placed in a basin of water for safety, meets the needs of the case. It should be put in a part of the room where the light reflected on the ceiling will not disturb the patient.

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## QUESTIONS ON CHAPTER IV

*The numerals indicate the pages where the answers may be found.*

	PAGE
In choosing a sick-room what points should be considered ? .. .. .	43
Why is it an advantage for the sick-room to open into a smaller room ? .. .. .	43
What are the essentials for the equipment of a sick-room ? .. .. .	43
Describe the method of cleaning and dusting a sick-room in preparation for a patient. . . . .	45
What is the best lighting for a sick-room ? .. .	45
How would you prevent lights from causing discomfort to the patient ? .. .. .	45
Where should a night-light be placed ? .. .	46

## CHAPTER V

## VENTILATION AND WARMING

## OBJECT OF VENTILATION AND WARMING

THE object of ventilation and warming is to keep the air the patient breathes as pure as the external air without chilling him.

## RESPIRATION

Respiration, or breathing, is carried out by the lungs and the air passages. Air enters the body through the nose (or mouth), passes to the back of the throat, and thence through the larynx to the windpipe (trachea). The trachea divides into the right and left bronchus, which enter respectively the right and left lung. Here they divide into bronchial tubes, which become smaller and smaller by subdivision until they terminate in minute air cells (alveoli).

Breathing consists of two acts—Inspiration and Expiration. In the first the ribs rise and the arched diaphragm becomes flattened. These movements increase the capacity of the thorax, tend to create a vacuum, and so draw air into the lungs. In expiration a reversal of these

movements takes place, and air is forced out. (See "Lungs" in the Glossary.)

The air on reaching the air cells in the lungs is brought into contact with the capillaries, through the delicate walls of which an interchange of gases takes place, the air giving oxygen to the blood and receiving in exchange carbonic acid gas, together with watery vapour and heat.

#### AIR

Normally pure air is a mixture of gases, of which oxygen forms about one-fifth, the remaining four-fifths being nitrogen (which serves merely to dilute the oxygen), and less than one per cent. of carbonic acid gas and watery vapour with traces of other gases. It is admirably adapted by its composition to refresh the air in the lungs. Expired air contains about 4 per cent. of carbonic acid gas, besides organic matter and watery vapour. Additional impurities are also given off through the skin. If, therefore, the air in an occupied room is not constantly changed, it soon becomes seriously contaminated and a source of danger.

#### VENTILATION

At least 3,000 cubic feet of fresh air are required by each occupant of a room per hour ; and as it is impossible to change completely the air of a

room more than three times an hour without causing draughts, it follows that the **minimum air space** which should be allowed for each person is 1000 cubic feet. Not more than 12 feet of height is reckoned, so that the floor space for each person is at least 83 square feet, say 10 ft. by 8 ft. 4 in., and proportionately more must be allowed if the room is less than 12 feet high.

#### TO VENTILATE AND WARM A SICK-ROOM

1. **Open the Window :** (a) if it is a sash window, at the top, so that the fresh air (generally cold) may enter well above the level of the patient. Air on being heated, e.g., by the fire, respiration or the body, becomes lighter and ascends to the upper part of the room, where it mixes with the cold fresh air which thus loses its chill before reaching the patient.

If for any reason, such as the force of the wind, it is undesirable to open the window at the top, the current of air entering may be directed upwards and its force broken by raising the lower sash of the window a little way, and filling in the opening with a board ; thus a space will be left between the sashes through which fresh air will enter (*Fig. 34*).

(b) If it is a casement window, a curtain or screen can generally be arranged to prevent

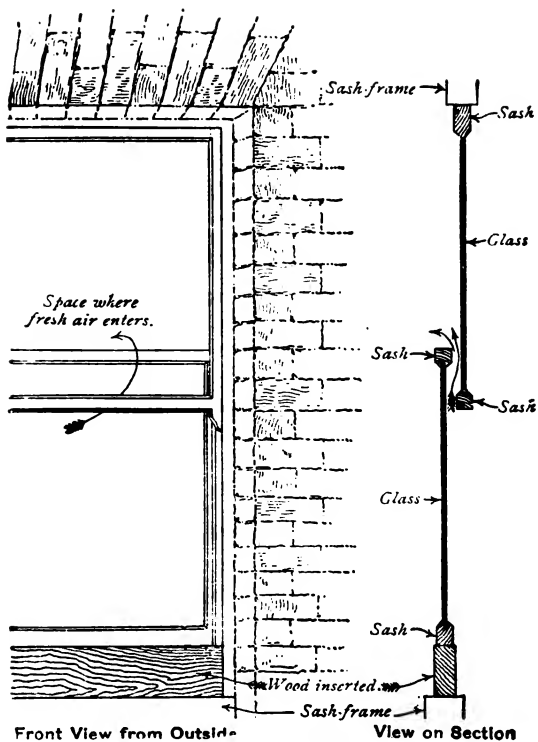


Fig. 34.—WINDOW-VENTILATION.

draughts : there is less draught when the window is opened wide, as a draught is caused more by the rapidity of entrance of the air than by its volume. An excellent way of lessening the draught is by fixing a piece of gauze over the opening.

The windows should be kept open night and day : it is a mistake to suppose that night air is in any way harmful.

2. **Be sure that the chimney is not obstructed.** Open the register if there is one, and remove any obstruction that may be present.

3. **Keep a fire, or at least a lamp in the fireplace, constantly burning.** The chimney is an excellent outlet for air, which passes up it partly by suction caused by wind over the chimney-pot, but chiefly in consequence of air being warmed by the fire or lamp and being thereby caused to ascend. As the air ascends it makes room for cold air, which in turn is warmed and ascends. A through current of air from an open window to the top of the chimney is thus provided.

Making up a fire noisily often causes acute discomfort to a patient. Coal should not be shovelled on but laid on gently with the hand (a glove being retained for this purpose); small pieces and coal dust should be made up in paper



packets outside the sick-room before being placed on the fire.

4. **Maintain the temperature** of the room between  $55^{\circ}$  and  $65^{\circ}$  F. by means of a fire, and not by shutting out fresh air. In ordinary cases  $60^{\circ}$  is the best temperature, but old people generally require  $65^{\circ}$  or more, which is also necessary in some chest diseases.

The temperature of the room should be taken by a thermometer hung on the wall, on a level with the patient's head and away from the fire-place or window.

A thorough flushing of the air in the room two or three times a day is desirable. This may be done by widely opening all windows and doors, whilst protecting the patient from draughts.

The patient can always be kept warm by plenty of bed-clothes, and by hot-water bottles applied to the feet and lower limbs.

The windows should be closed while the patient is being washed or exposed for any necessary attention.

## QUESTIONS ON CHAPTER V

*The numerals indicate the pages where the answers may be found.*

	PAGE
What is the object of ventilation and warming ?	47
How is respiration carried out ? .. ..	47

	PAGE
Describe inspiration .. .. .	47
Describe expiration .. .. .	47
What happens to the air in the lungs ? .. ..	48
What is the composition of air ? .. ..	48
Why should the air in an occupied room be constantly changed ? .. .. .	48
What is the minimum air space for each person ?	48
How may a sick-room be ventilated ? .. ..	49
What should be avoided in so doing ? .. ..	49
Why should a current of fresh air enter the room well above the level of the patient ?	49
Give the methods of preventing a draught ..	49
Should windows be kept open at night ? .. ..	51
How does a fire assist the ventilation of a room ?	51
How would you make up a fire in the sick-room ?	51
At what temperature should the sick-room be maintained ? .. .. .	52
When should it be kept at a higher level ? ..	52
Where should the thermometer be kept ? ..	52
How should the air in a sick-room be flushed ?	52

## CHAPTER VI

**THE BED**

## ITS POSITION

**The Bed** should be placed in such a position that air can circulate freely round it, and a nurse can easily get at the patient. Its side must not be placed close up to the wall, nor its head against an outside wall, because external walls are apt to be damp and either cold or hot according to the weather ; these variations in temperature and atmosphere may affect the patient adversely. When possible the head should be 1 ft. or 18 in. away from a wall. The bed should never be in the line of draught between the window and fireplace. It should not face the window nor, by facing the door, be exposed to scrutiny and draught every time the door is opened.

**The Bedstead** should be of iron, 6 ft. 6 in. in length and 3 ft. 6 in. wide, and fitted with a spring mattress.

## TO MAKE A BED

To make a bed, put on the requisites in the following order :—

1. A piece of **sacking** tied to the frame at

the head and foot with tapes, to prevent the mattress from slipping and to preserve it from rust marks.

2. **A firm mattress** preferably of horse-hair.

3. **The under-blanket**, smoothly and firmly tucked under the mattress.

4. **The under-sheet**, smoothly and firmly tucked under the mattress at the head, then at the foot, and lastly at both sides.

5. **A mackintosh**, proofed on both sides and slightly less than half the width of the sheet. It should be placed across the bed and should extend from just under the edge of the pillow to the patient's knees.

6. **The draw-sheet**, used to protect the under-sheet and mattress and to keep the patient dry and clean. It is more easily kept free from creases and changed when soiled than the under-sheet. It can be made by folding an ordinary sheet lengthwise so that it is wide enough to cover completely the mackintosh. Tuck one end under the mattress on one side of the bed; spread the sheet smoothly across the bed, fold the remainder and place it under the mattress on the other side.

7. **Two pillows** in pillow-slips.

8. **The top sheet** (its broad hem at the top) which should reach right up to the head of

the bed so as to leave plenty to turn down. It should be well tucked under the mattress at the foot of the bed, and half way along the sides.

9. **Two light and warm blankets.** These should be placed with the top ends half way up the pillow, so that they may be drawn round the neck. Each should be well tucked in separately at the foot of the bed and half way up the sides, but must not be drawn so tightly as to restrict free movement.

10. **A light counterpane.** An eiderdown, which should be light and porous, may be added if desired.

#### TO TUCK IN A SHEET OR BLANKET

To tuck in a sheet or blanket, lay the palms of your hands flat over the sheet on the edge of the wire mattress with the finger tips of one hand pointing to those of the other, with an interval of three inches between them (*see Fig. 37*). Move your hands sideways away from each other under the hair mattress, conveying the sheet with them. In this way the sheet is spread smoothly under the mattress, and the mattress itself will not be hunched up, as is invariably the case when the sheet is pushed in by the hands with the fingers foremost and palms upwards.

It will enhance the appearance of the bed if

the sheets and blankets are tucked in at the foot in "envelope" fashion as illustrated in *Figs. 35* to *40*, as follows :—

i. After tucking in the sheet at the foot of the bed, take the edge of one side at the point A (*Fig. 35*) and fold it back on the bed. (The position of point A may vary with the width of the sheet.) It will be seen that a part B (*Fig. 36*) of the sheet will remain hanging down.

ii. Tuck in that part B of the sheet which remains hanging down (*Fig. 37*).

iii. Lower the side of the sheet which was folded back on the bed till it hangs down at the side of the bed (*Fig. 38*), and tuck it in (*Fig. 39*). A neat, firm corner is the result (*Fig. 40*).

The comfort of a patient depends so much upon the way his bed is made that the nurse cannot be too painstaking in making it. The general rule is that all clothing under the patient should be tight and smooth, whilst that over the patient should be light and loose.

#### TO CHANGE SHEETS

To change the sheets of a patient **too ill to be moved from the bed** or to lie on his side **without support** it is desirable to have **two** nurses, one on each side of the bed.



Fig. 35.

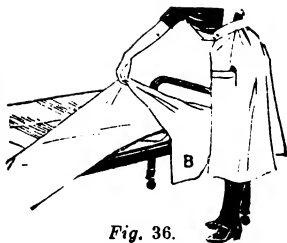


Fig. 36.

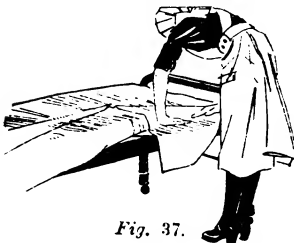


Fig. 37.

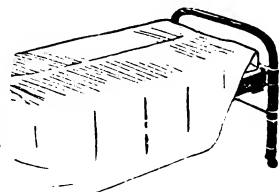


Fig. 38.



Fig. 39.

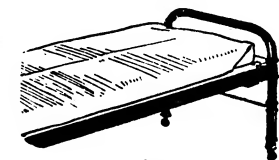


Fig. 40.

**Figs. 35-40.—“ENVELOPE” CORNERS FOR SHEET AND BLANKET.**

**The under-sheet.**

**A.** When the patient can be turned on his side and supported—

*If the draw-sheet is clean and does not require changing :*

i. The clean sheet is warmed, rolled lengthwise to half its extent and placed in readiness over a chair.

ii. All the bedclothes except the under-blanket are untucked ; the upper pillow and all the top bedclothes are removed except the sheet (and, if desirable, one blanket), which must be left over the patient ; the pillow is shaken up and set to air with the blankets.

iii. One nurse stretches over the body of the patient, places her hands behind his shoulder and buttock over the sheet (and blanket, if any) and turns him on to his side so that he faces her ; she supports him in this position, keeping him well covered.

iv. The second nurse folds the mackintosh and draw-sheet over the patient and rolls the under-sheet until it lies in a long tight roll close against the patient's back.

v. She places the rolled clean sheet against the soiled roll and smooths the unrolled portion towards herself and tucks in the under-sheet, mackintosh, and draw-sheet.



vi. The first nurse lowers the patient on to his back over the two rolls, and the second nurse turns him over on to his other side ; she supports him in this position, keeping him well covered.

vii. The first nurse withdraws the dirty roll and unrolls the clean under-sheet, which is smoothed out and tucked in.

viii. The mackintosh is smoothed out ; the draw-sheet is drawn through, folded and placed under the mattress.

ix. The second nurse lowers the patient on to his back.

x. The top pillow and bedclothes are replaced and the latter are tucked in.

*If the draw-sheet is dirty and requires changing :*

i. The clean sheet is warmed, rolled lengthwise to half its extent and placed in readiness over a chair ; the clean draw-sheet is also warmed, rolled, and placed with it.

ii. All the bedclothes except the under-blanket are untucked, the upper pillow and all the top bedclothes are removed except the sheet (and, if desirable, one blanket) which must be left over the patient : the pillow is shaken up and set to air with the blankets.

iii. One nurse stretches over the body of the patient, places her hands behind his shoulder and

buttock over the sheet (and blanket, if any) and turns him on to his side so that he faces her ; she supports him in this position, keeping him well covered.

iv. The other nurse rolls the draw-sheet, cleans and dries the mackintosh, and rolls it and the under-sheet until they lie in separate rolls close against the patient's back.

v. She places the clean sheet against the soiled rolls, smooths the unrolled portion towards herself and tucks it in.

vi. She smooths out the mackintosh towards herself ; she places the clean draw-sheet over it and tucks it in at her side of the bed ; she places the remainder of the roll against the patient's back.

vii. The first nurse lowers the patient on to his back over the rolls, and the second nurse turns him on to his other side ; she supports him in this position, keeping him well covered.

viii. The first nurse withdraws the dirty draw-sheet, cleans and dries the mackintosh, and withdraws the dirty under-sheet. She unrolls the clean under-sheet, smooths it out and tucks it in. The mackintosh and the clean draw-sheet are smoothed out and the unrolled portion placed under the mattress.

ix. The second nurse lowers the patient on to his back.

x. The top pillow and bedclothes are replaced and the latter are tucked in.

*An alternative method* of changing the draw-sheet when it and the under-sheet are both dirty may be adopted when the patient is not so seriously ill as to be affected by frequent turnings :

i. The clean sheet is warmed, rolled lengthwise to half its extent and placed in readiness over a chair : a clean draw-sheet is also warmed, rolled, and placed with it.

ii. All the bedclothes except the under-blanket are untucked, the upper pillow and all the top bedclothes are removed except the sheet (and, if desirable, one blanket) which must be left over the patient ; the pillow is shaken up and set to air with the blankets.

iii. One nurse stretches over the body of the patient, places her hands behind his shoulder and buttock over the sheet (and blanket, if any) and turns him on to his side so that he faces her ; she supports him in this position, keeping him well covered.

iv. The other nurse rolls the draw-sheet, the mackintosh, and the under-sheet together until they lie in one long roll close against the patient's back.

v. She places the rolled clean sheet against the soiled roll, smooths the unrolled portion towards herself and tucks it in.

vi. The first nurse lowers the patient on to his back over the two rolls, and the second nurse turns him over on to his other side ; she supports him in this position, keeping him well covered.

vii. The first nurse withdraws the dirty roll, and unrolls the clean under-sheet which is smoothed out and tucked in.

viii. The clean draw-sheet and mackintosh are placed in position in a similar manner to the clean under-sheet.

ix. The second nurse lowers the patient on to his back.

x. The top pillow and bedclothes are replaced and the latter are tucked in.

B. When it is not desirable to turn a patient on to his side, as for example in the case of a fractured leg or enteric fever—

*If the draw-sheet is clean and does not require changing :*

i. The clean sheet is warmed, rolled up cross-wise to its full extent and placed in readiness over the head of the bedstead.

ii. All the bedclothes except the under-blanket are untucked and both ends of the draw-sheet and mackintosh are turned over the patient's body.

iii. The nurses, each with one hand, raise and support the patient's head and shoulders, and

with their free hands remove the pillows and roll the soiled sheet down as far as possible.

iv. They place the rolled clean sheet across the head of the bed, where they tuck it in firmly and unroll it to meet the soiled roll.

v. The pillows are replaced, and the patient's head and shoulders are lowered.

vi. While both nurses raise together the lower parts of the body successively, they continue the rolling and unrolling process until the soiled roll is clear of the patient and the clean sheet is in position.

vii. The clean sheet is smoothed out and tucked in.

viii. The mackintosh and draw-sheet are replaced, smoothed and tucked in.

ix. The top bedclothes are tucked in.

*If the draw-sheet is dirty and requires changing :*

i. The clean sheet is warmed, rolled up cross-wise to its full extent and placed in readiness over the head of the bedstead : the draw-sheet is also warmed and placed in readiness on a chair.

ii. All the bedclothes except the under-blanket are untucked.

iii. While one nurse raises and supports the patient's back, the other nurse removes the dirty draw-sheet and mackintosh.

iv. They change the under-sheet as in B (iii) to (vii) inclusive.

v. While one nurse raises and supports the patient's back, the other nurse places in position the clean draw-sheet and mackintosh.

vi. The top bedclothes are tucked in.

**The draw-sheet.**

The draw-sheet is **changed** in the manner already described.

When it is necessary to **alter the position** of the draw-sheet—

i. The top bedclothes are untucked.

ii. One nurse withdraws the part of the draw-sheet which has been folded under the mattress and tucks in its end.

iii. She raises and supports the patient's back sufficiently to allow the nurse on the other side to pull the draw-sheet through until it is taut.

iv. The patient is lowered and the second nurse folds the length of draw-sheet (now transferred to the other side of the bed) and places it under the mattress.

v. The top bedclothes are tucked in.

**The top sheet.**

i. All the top bedclothes except the sheet (and, if desirable, a blanket) are removed.

ii. The warmed clean sheet is spread over the soiled sheet or blanket.

iii. Whilst one nurse, standing at the head of the bed, holds the clean sheet near the patient's

shoulders, the other nurse withdraws the soiled sheet (and blanket, if any) over the patient's feet.

iv. The upper bedclothes are replaced and tucked in.

#### TO TURN A MATTRESS

Mattresses have to be turned even though a patient cannot leave his bed. The method of turning or changing the mattress is to remove the counterpane and top blanket, fold back on to the patient all the remaining upper bedclothes, and then to roll up the lower sheet and blanket tightly together till they form two rolls, one on either side of the patient. Two nurses take hold of these rolls, one on each side of the bed, and lift the patient up while a third person draws the mattress out from the foot of the bed, turns and replaces it. The patient is then lowered on to the bed, and the bedclothes are arranged as usual.

#### BEDS FOR SPECIAL CASES

a. If a patient is suffering from a **fractured spine, pelvis, thigh or leg**, it is necessary to prepare the bed specially. This is best done by placing "fracture boards" across the bedstead, removing the wire mattress if on a wooden frame.

Fracture boards are of wood about an inch thick, a foot wide, corresponding in length to the width of the bedstead. They must be sufficient in number to extend from the head to the foot of the bedstead. To provide for ventilation the boards should either have holes bored through them, or an interval of an inch should be allowed between each of them.

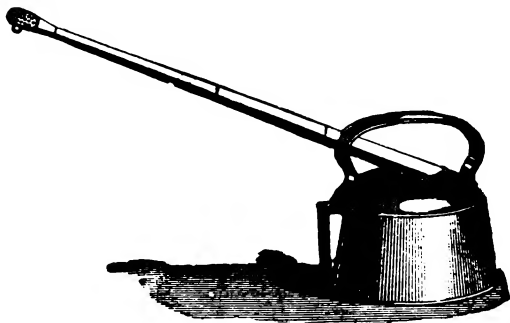
*b.* A patient suffering from acute **rheumatism** should be kept between blankets, as this disease induces profuse perspiration. A narrow draw-sheet should be placed across the bed beneath the pelvis, leaving loins and shoulders in contact with the blanket. It is necessary to have two pairs of blankets, so that one pair may be aired and warmed every day, and washed as often as required. A sheet may be placed over the upper blanket and the top turned down under it to lessen the irritation to the patient's face and neck.

*c.* If a patient has **difficulty in breathing** when lying down, it may be necessary to prop him up with a bed-rest (see *Fig. 47*, p. 76) to support the back, and, to prevent him from slipping down one of the methods advocated on page 75 should be employed; an additional pillow at either side will afford further support.



## TO KEEP THE AIR MOIST

When it is necessary to keep the air moist, use a bronchitis kettle (*Fig. 41*), which should be filled and from time to time replenished with boiling water. Take care not to let the steam



*Fig. 41.*—BRONCHITIS KETTLE.

issue directly on to the patient. If the steam is to be impregnated with any medicament, insert a pad of cotton wool sprinkled with the medicament into the spout, but not so tightly as to check unduly the escape of steam.

## TENT-BED

Whenever a tent-bed is ordered by the doctor it should be made as follows :—

*a.* Place round the bed two three-fold screens or clothes-horses.

*b.* Place sheets over the screens to form a roof and sides, leaving an opening at one side, for the spout of the kettle.

*c.* Hang a thermometer inside, and maintain the temperature at about 65° F.

## QUESTIONS ON CHAPTER VI

*The numerals indicate the pages where the answers may be found.*

	PAGE
In what position should the bed be placed ? ..	54
Describe a suitable bedstead .. .. .	54
Give the requisites for making a bed in the order in which they are placed in position ..	54
What is a draw-sheet ? .. .. .	55
How can it be made ? .. .. .	55
How would you tuck in a sheet or blanket ? ..	56
Describe the "envelope" method of tucking in a sheet ? .. .. .	57
What is the general rule of bed making ? ..	57
When is it necessary to have two persons to change the sheets .. .. .	57

How is the under-sheet changed—	
(a). When the patient can be turned on his side .. .. .	59
(b) When the patient cannot be turned on his side .. .. .	63
How is the top sheet changed ? .. .. .	65
How is the position of the draw-sheet altered ?	65
How would you turn a mattress with the patient in bed ? .. .. .	66
What are fracture boards ? .. .. .	66
When are they used ? .. .. .	66
How would you prepare the bed for a case of acute rheumatism ? .. .. .	67
When may it be necessary to support a patient in bed ? .. .. .	67
How is this carried out ? .. .. .	67
How would you keep the air in the sick-room moist ? .. .. .	68
What must be avoided in doing so ? .. .. .	68
How can the air be impregnated with a medicament ? .. .. .	68
What is a Tent-Bed ? .. .. .	69
How is it made ? .. .. .	69
What temperature should be maintained in it ?	69

## CHAPTER VII

**NURSING REQUISITES**

**Hot-water Bottles or Tins** should be filled to three-quarters of their capacity with very hot, but **not boiling**, water and refilled when necessary. It is most important that the bottles should be kept hot in the early hours of the morning when the patient's vitality is lowest.

Rubber bottles are best for applying to the abdomen and chest, their pliability adapting them to any position.

Very serious results may follow a burn or scald from a hot-water bottle, and it must be borne in mind that not only unconscious, but paralytic and dropsical patients, are insensible to feeling. A hot bottle must therefore be examined for any leakage and the screw securely fastened. It must be enclosed in a flannel or felt bag and its heat tested with the bare elbow.

In an emergency, when ordinary hot-water bottles are not forthcoming, bags filled with salt, sand or bran heated in the oven or before a fire, or a hot brick covered with flannel, can be substituted. Other substances may suggest themselves to a resourceful nurse.

**Woollen Bed-socks** secure an equable warmth

to the feet. The nurse must remember that all woollen garments may become a source of uncleanness, and must therefore never omit their frequent changing and washing.

**Air-cushions** are used for the relief of undue or long-continued pressure on any part of the body. In ordinary health a person never rests continuously in one position, but in sickness, when a patient is very weak or paralysed, the position may not be altered for long periods, with the consequence that prominent bony parts of the body, such as the lower part of the spine, the heels or the elbows, are continuously pressed on. This interferes with the normal flow of blood through these parts, with the result that their nourishment is stopped and death of the part takes place, i.e., a bed-sore is formed.

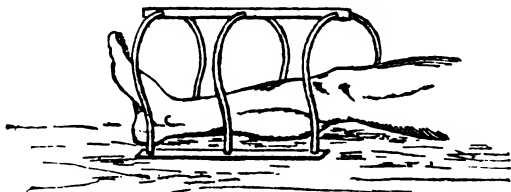
Air-cushions vary in size and shape, some being horse-shoe and others circular or square with an opening in the centre, so that all pressure is taken off the affected part.

Air-pillows and air-beds, water-pillows and water-beds are also in use. They should only be filled sufficiently to prevent the under-surface being felt when firmly pressed on with both hands.

**Improvised Ring-cushion.**—Tease out tow into a circle 16 inches in diameter and 10 inches high. Add above and below this a 3-inch layer

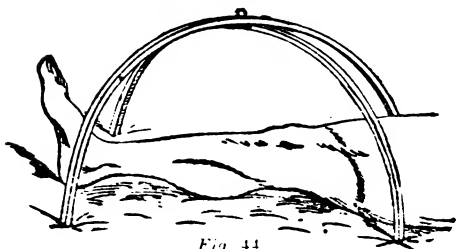
of teased-out cotton wool. Make an opening in the centre and work a roller bandage over the tow and cotton wool until the height of the cushion is about 4 inches, and the opening in the centre is about 7 or 8 inches.

**Bed-cradles** are used to take off the pressure of the bedclothes from any part of the body, and when used, a thin blanket is laid over the part for warmth. When the ordinary wood and iron cradle (*Fig. 42*) is not available, a good



*Fig. 42.*—BED-CRADLE.

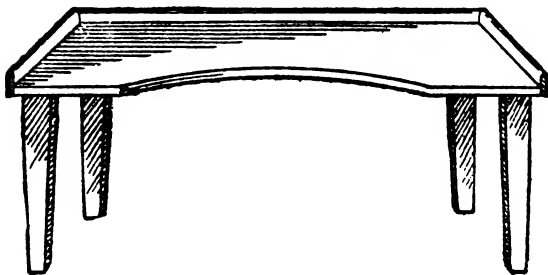
substitute can be improvised from a band-box with an arched opening cut in its two opposite sides (*Fig. 43*), or from a child's hoop sawn in half with the one half arched and secured across the other (*Fig. 44*), or even from a three-legged stool (*Fig. 45*). Pillows placed at the end of the mattress are sufficient to take the pressure of the bedclothes off the feet.

*Fig. 43.**Fig. 44.**Fig. 45.*

*Figs. 43-45.*—IMPROVISED BED-CRADLES.

**Bed-table** is usually 2 feet long, 1 foot wide, and 8 inches high (*Fig. 46*). It is very serviceable when the patient has to remain in bed, but is able to sit up.

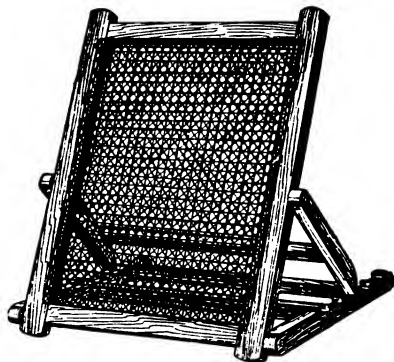
**Bed-rests** to support the back of a patient sitting up in bed can be purchased (*Fig. 47*). A bed-rest may be improvised by placing a small



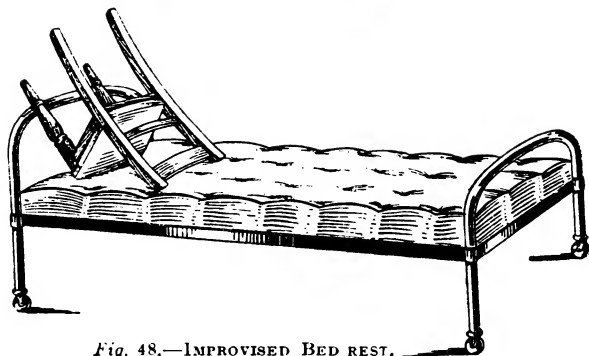
*Fig. 46.*—BED-TABLE.

square-backed chair upside down at the head of the bed with the top of the back and the front edge of the seat resting on the mattress- (*Fig. 48*). Pillows are laid upon the bed-rest. There is always a tendency for the patient to slip down in bed when the back is raised, and to counteract this a small square box or foot-stool may be placed at the foot of the bed, or a





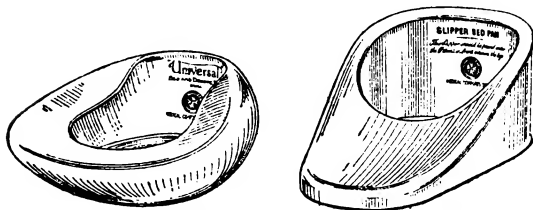
*Fig. 47.--BED-REST.*



*Fig. 48.--IMPROVISED BED REST.*

small pillow wrapped in a sheet should be placed under the knees, and the ends of the sheet tucked under the mattress, or attached by cords to the ironwork at the head of the bed.

**Bed-pans** are of two kinds, the round (*Fig. 49*) and the slipper (*Fig. 50*). The round one, held obliquely, is passed in from the side nearest



*Figs. 49, 50.*—BED-PAN.

to the nurse and slipped beneath the patient by a downward pressure on the bed ; the slipper is gently pushed in beneath the buttocks from the front between the legs, which are bent to facilitate this procedure. A bed-pan should always be dry and warmed before being given to the patient, and its rim should be powdered ; if there is much perspiration or the patient is very thin, the rim should be smeared round with vaseline or

oil. If a round bed-pan with a handle is used, the handle should be plugged.

The bed-pan can be given by one person, if the patient is able to move himself a little, but when he is helpless two persons are advisable—one to lift the patient and one to place the bed-pan in position.

Bed-pans should always be covered after use and removed from the sick-room immediately. They should be thoroughly washed over the pan of the water-closet.

Urinals must be washed out with soda and hot water after use.

## QUESTIONS ON CHAPTER VII

*The numerals indicate the pages where the answers may be found.*

	PAGE
State how you would fill a hot-water bottle ..	71
When is it most important that their heat should be maintained? .. ..	71
For what parts of the body are rubber hot-water bottles best suited? .. ..	71
Why must the hot-water bottle be enclosed in a flannel or felt cover? .. ..	71
What can be used as substitutes for hot-water bottles? .. ..	71
What are the advantages of woollen bed-socks?	71
What is the object of an air-cushion? .. ..	72

	PAGE
How are bed-sores formed ? .. ..	72
How firmly would you fill an air-pillow or air-bed ?	72
Describe an improvised ring-cushion .. ..	72
What is a bed-cradle ? .. ..	73
What are good substitutes ? .. ..	73
What is a bed-table ? .. ..	73
How may a bed-rest be improvised ? .. ..	75
When they are used how would you prevent a patient from slipping down the bed ? ..	75
How many kinds of bed-pans are there ? ..	77
State the method by which each is given to the patient .. ..	77
With what must urinals be washed ? .. ..	78

## CHAPTER VIII

**THE DAILY ROUTINE**

THE aim of the home nurse must be to carry out her nursing duties in the best interests of the patient, and to combine with these the necessary domestic duties and attention to her own health. It is therefore essential that some method be adopted in arranging her work. The following summary, which can be varied, may be helpful.

Her duties in the sick-room usually begin when the patient wakes in the morning.

Air, dust and tidy the room; sponge the patient's face and hands and clean his teeth. The patient's temperature, pulse and respirations should now be taken and recorded before giving him his breakfast.

After breakfast the patient should rest for half an hour, and then be washed, his night-clothes changed for his day-clothes and the bed made.

The nurse should now prepare for the doctor's visit.

After lunch the patient should have at least an hour's rest and sleep. The afternoon is also convenient for the nurse's off-duty period, but

she must leave the necessary instructions regarding food, medicines and visitors.

In the evening the room should again be aired and tidied, the patient's hands and face sponged and his teeth cleaned; the temperature, pulse and respiration taken and recorded, the day-clothes changed for night-clothes and the bed straightened.

#### TO CLEAN THE TEETH

When the patient is unable to clean his teeth as usual take a toothbrush or wrap a piece of wool round a small stick, dip it in a suitable antiseptic lotion or use a good tooth paste, and carefully wash both sides of the teeth and also between the gums and the cheek. Also gently clean the tongue.

#### TO WASH THE PATIENT

The daily washing of a patient is essential for keeping the skin clean, and adds greatly to his comfort. It should be done in the morning after breakfast.

i. Close all windows and place a table close to the bed with all the requisites for washing. Air and warm the patient's day-clothes.

ii. Remove the upper bedclothes except one

blanket and place them over a chair—never throw them on the floor.

iii. Remove the pyjamas or nightdress. In the case of an injured limb the clothing must first be drawn off the limb that is uninjured, and then off the injured one. The reverse method should be followed when putting on a garment. Cover the patient's chest, the pillow and bedclothes with warm towels.

iv. Wash and dry the face and neck, using firm pressure and avoiding light dabs. Washing well behind the ears produces a refreshing effect.

v. Wash and dry each arm separately outside the blanket.

vi. With one hand wash and dry the front of the body while holding up the blanket with the other.

vii. Wash and dry the legs and feet, one at a time outside the blanket.

viii. Wash the back and dry it. Rub the buttocks and sacrum with spirit (a circular movement being used) and powder them. This keeps the blood circulating and prevents bed-sores.

ix. Powder the armpits, under the breasts, and any folds of the skin.

x. Remove the towels, put on the day-clothes and make the bed.

### THE PULSE

The pulse is that expansion of an artery which is caused by each beat of the heart ; it can be felt in any artery near the surface.

### TO COUNT THE PULSE

The usual way to take the pulse is to place the first three fingers on the radial artery at the front of the patient's wrist, and press it lightly ; the middle finger-tip must be half an inch away from the outer edge of the wrist on the thumb side.

A watch with a second hand should be used, and the beats should be counted for one whole minute. The normal number of beats per minute is in an adult 70 to 80, in youth and childhood 80 to 100, in infancy 100 to 120.

The knowledge of having the pulse taken may increase its rate in a nervous patient. The nurse should therefore endeavour to distract the patient's attention while counting the rate of the pulse.

### RESPIRATION

Respiration, or breathing, consists of two acts—Inspiration, the enlargement of the chest cavity, during which air is drawn into the lungs,



and Expiration, the diminution of the chest cavity, during which air is driven out of the lungs. A pause follows the act of expiration.

#### TO COUNT THE RESPIRATIONS

To count the respirations watch the rise and fall of the chest, always remembering that the rise and fall are but one respiration.

The normal rate is from 15 to 20 times a minute—about a fourth of the rate of the pulse.

As the patient is liable to breathe more quickly if he knows that respirations are being counted, it is best to do so after counting the pulse.

If the patient is unconscious, turn his head on one side; this makes respiration easier, for if the patient is lying face upwards the tongue is apt to fall back and cause obstruction to the air passages (asphyxia).

#### TEMPERATURE

The temperature of the body is the result of two sets of processes :—

1. *Those by which heat is gained in the body—*
  - (a) Whenever blood comes in contact with the tissues, oxygen being given off and carbonic acid gas formed (oxidation).

- (b) Whenever muscular or mental action takes place (metabolism).
  - (c) By the ingestion of hot foods and liquids, and
  - (d) By warm clothing.
2. *Those by which heat is lost to the body—*
- (a) By the skin in the form of perspiration : this is greater in hot weather, because the outside heat dilates the blood-vessels of the skin and brings more blood to the surface.
  - (b) By the lungs, in the giving off of heat to the expired air.
  - (c) By the excretions from the kidneys and bowels.

The normal temperature is  $98.4^{\circ}$  F., and is regulated by the circulation of the blood. Slight variations are common in health, and the temperature is usually at its lowest between 1 and 3 a.m., and at its highest between 6 and 10 p.m.

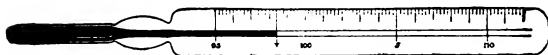
The temperature in the interior of the body is usually  $1^{\circ}$  higher than that of the surface, and the evening temperature is  $\frac{1}{2}^{\circ}$  higher than that of the morning.

The sensations of the patient and the warmth or coldness of the skin are not reliable guides to the actual temperature of the body.

The clinical thermometer (*Fig. 51*) is the instrument for taking the temperature. It differs from an ordinary thermometer, inasmuch as—

1. The scale is graduated only from  $95^{\circ}$  to  $110^{\circ}$  F., as follows :—

(a) By long lines (four of which are marked respectively 95, 100, 5—representing 105—and 110). Each long line represents



*Fig. 51.*—CLINICAL THERMOMETER.

a degree, so that if, after taking a temperature, the mercury rises exactly to 100, the patient's temperature is  $100^{\circ}$ . If the mercury rises exactly to the next long line, the temperature is  $101^{\circ}$ , and so on.

(b) By short lines in groups of four between the long lines. Each short line represents two-tenths of a degree ( $\cdot 2$ ). If the mercury reaches to the first short line above 101, the temperature is  $101\cdot 2^{\circ}$ ; if to the second,  $101\cdot 4^{\circ}$ , and so on to  $101\cdot 6^{\circ}$ ,  $101\cdot 8^{\circ}$ ; while the next long line,

of course, indicates  $102^{\circ}$ . Normal temperature ( $98.4^{\circ}$ ) is marked with an arrow, thus : ↓

2. The mercury does not fall of its own accord, but must be shaken down after the temperature has been taken and recorded. To shake it down, hold the thermometer by the end away from the bulb, and give it a few sharp jerks.

#### TO TAKE THE TEMPERATURE

i. See that the mercury is standing at or below 95. Immerse the thermometer in cold water and dry it.

ii. Place the bulb of the thermometer in the mouth or armpit or, in the case of infants, in the groin ; or, in exceptional circumstances, in the rectum.

If the temperature is taken in the mouth, the bulb is placed under the tongue, and the patient should be cautioned against talking, opening the lips, or closing the teeth. If in the armpit, the skin must be thoroughly dried, and no fold of bedclothes or garment must hinder its all-round contact with the skin ; the patient's arm should be pressed close to his side, and his hand laid across his chest. A child's arm should be held against his side by the nurse. If in the

groin, the thigh should be pressed back against the abdomen. If in the rectum, the bulb should be oiled, and the thermometer inserted about two inches and held in position.

Some thermometers are marked to indicate the time required for them to register a temperature. A longer time than that marked on the instrument should be allowed; unmarked thermometers should be left in for five minutes.

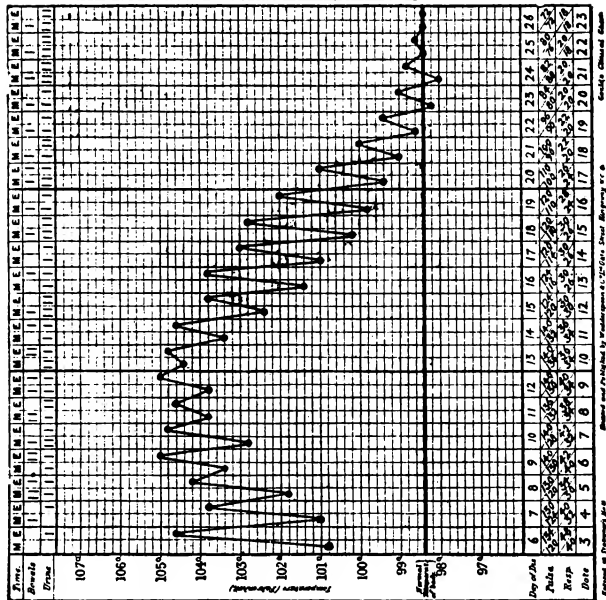
iii. Always take the patient's temperature in the same place. If for any reason this is not done, record the fact.

iv. Never take a temperature in the armpit just after the patient has been washed, nor in the mouth just after a hot drink.

v. Never let the patient take his own temperature.

#### TO RECORD THE TEMPERATURE

It will be noticed that the temperature chart (*Fig. 52*) has a number of lines ruled across it to correspond with the scale of the thermometer. The chart is divided from top to bottom by thick and thin lines. Each space between two thick lines represents a day, which is usually divided by a thin line into two columns, headed respectively "M" (morning) and "E" (evening). In addition there are extra thick lines dividing



**Fig. 52.—TEMPERATURE CHART.**

Enteric  
(Typhoid)

### Notes of Case

45 m.

*Amn.*

22 ynd.

Liquid

Case Book No. 1

Date of admission

3 Oct. 1900

## Result Formulasung

the chart into weeks. Supposing that on the morning of the first day of an illness the patient's temperature is  $100^{\circ}$ , put a dot in the column of the first day headed "M," on the line marked 100. In the evening the temperature has risen (say) to  $101.2^{\circ}$ , put a dot on the line corresponding with 101.2 in the column headed "E," and join the two dots by a line. Pursue this plan day by day, and at the end of a few days the course of the patient's temperature will be shown by a series of zigzag lines (*see Fig. 52*). The use of a ruler when joining the dots will aid in the neatness of the chart. Always verify the entry by a second inspection of the thermometer before shaking down the mercury.

Charts with six columns to the day (four-hourly charts) are required in some cases. These are headed 2, 6, 10 ; 2, 6, 10, showing the hours at which the temperature should be taken.

Cleanse the thermometer by immersing it in cool disinfecting solution ; then wash it in cold water, wipe it dry and replace it in its case, bulb first. It may easily be broken by immersion in hot water.

Spaces are usually provided on the chart for recording the pulse-rate, respirations, action of the bowels, amount of urine, diet and for any special notes.

## QUESTIONS ON CHAPTER VIII

*The numerals indicate the pages where the answers  
may be found.*

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State how you would arrange the routine work of the day .. .. .	80
How would you clean the patient's teeth ? ..	81
Why is the daily washing of a patient essential ?	81
When should it be done ? .. .. .	81
What preparations would you make before disturbing the patient ? .. .. .	81
What should be done with the bedclothes ? ..	82
How would you remove the patient's clothing in the case of an injured limb ? .. ..	82
Describe the method of washing the patient ..	82
What special attention would you give to the buttocks and sacrum ? .. .. .	82
What parts should be powdered ? .. .. .	82
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## CHAPTER IX

**OBSERVATION OF THE SICK**

WHEN a person is ill, the doctor diagnoses the case and lays down a plan of treatment. It is the duty of the nurse to carry out the treatment which has been prescribed and also intelligently and carefully to **observe** and accurately **report** upon any changes which may occur between the doctor's visits. It is better to report too much than too little ; the doctor will know the points of importance which will guide him in his treatment.

The report should **record** the patient's condition, food and medicines given, applications changed, and any special symptoms which may have appeared or changes which have been noticed.

The nurse must **observe** :—

i. **Temperature.** The temperature should be taken night and morning, and, in serious cases, every four hours.

When the temperature rises above normal the condition is known as fever (pyrexia). If it rises to  $101^{\circ}$  a reduction may be sought by encouraging perspiration ; sponging with tepid

water to which a little vinegar (a teaspoonful to a quart) may be added, applying extra covering of blankets, hot bottles and giving hot drinks such as hot tea, hot milk, hot lemon-water, are useful for this purpose.

A temperature above  $104^{\circ}$  (hyperpyrexia) indicates that the patient's life is in danger. A temperature below  $98^{\circ}$  (subnormal), with a further fall, may be followed by collapse. If the temperature exceeds  $101^{\circ}$  or falls below  $98^{\circ}$  the doctor must be notified.

High temperature ends either by

(a) *Crisis*, when it falls rapidly or abruptly, reaching normal in from twelve to twenty-four hours.

(b) *Lysis*, when it falls more gradually, 3 or 4 days elapsing before the temperature reaches normal and remains there.

ii. **Rigors.** A rigor consists of a severe shivering fit accompanied by a marked rise of temperature. It is due to some abnormal difference between the temperature of the surface and that of the interior of the body. Rigors usher in many acute diseases.

Put the patient to bed, give hot drinks and apply warmth to the body. These measures should induce profuse perspiration and a consequent fall of temperature. Note the time of

occurrence of a rigor, take and chart the temperature at the time and half an hour afterwards. Rigors must not be made an excuse for letting the air in the room get overheated and impure.

iii. **Posture.** The position in which the patient lies should be noted. He may be lying absolutely flat on his back or with his knees drawn up: he may lie on his face, or, to obtain more relief, on one side: or he may be sitting up owing to difficulty in breathing.

In very exhausting diseases—for instance, towards the end of a long fever—an absolutely horizontal posture is natural, and any desire to have the head raised is a good sign.

In diseases when the breathing is difficult, the patient prefers to sit up, as the respiratory muscles have more power in that position. In such cases lying down is a good sign, provided that the strength keeps up.

Lying always on the same side may be a sign of local disease—possibly of the lung, as the patient in such cases usually lies on the affected side, thereby allowing greater freedom to the unaffected side.

In inflammation of the bowels lying on the back with the knees drawn up to relax the abdominal muscles is usual.

In colic, as pressure affords relief, the patient often lies on his face.

Lying continually in one position causes congestion of the lungs, which in exhausting diseases is a grave complication. For this reason occasional changes of posture are necessary, but for the greater part of the time a patient should be assisted to retain the most comfortable position, as by a pillow laid against the back to support him on his side, or by a comfortable bed-rest to support the head and shoulders. Constant attention may be necessary, as pillows soon get disarranged and slip down.

It is the nurse's duty to assist the patient to retain the position which gives most relief. In some diseases a sudden change of posture is dangerous. Lives have been lost by carelessly or suddenly raising patients.

**iv. The Face.** The colour should be noted ; it may be flushed or blue, pale or yellow. It may be pasty or puffed out. The expression may be calm and cheerful or anxious : it may be pinched and drawn with pain, or heavy and listless.

The eyes should be carefully observed and any irregularity in the size of the pupils or tendency to squint should be noted.

It is important to note any pain in, or discharge from, the ears.

v. **The Skin.** The skin may be dry or moist or sweating : it may be hot, or cold and clammy : it may be flushed or pale or yellow or blue.

Look for puffiness or swelling on any part of the body : see if any rash is present ; if so, note the time and position of its first appearance.

vi. **Sleep.** Sleep is a manifestation of rest, and is essential alike in health and sickness. Intervals of rest alternating with periods of work are the necessary conditions for the healthy performance of the functions of the body. In sickness the active work of the body is necessarily far less than in health, but there is always some work going on, and in its weakened state the body requires long periods of sleep.

Much can be done by the nurse to induce sleep. A darkened room, whether at night or in the daytime, generally has a soothing effect. Lights should be shaded to avoid glare in the patient's eyes. The flicker of a fire will make some patients drowsy, while in other cases it will have the opposite effect. It is a mistake to keep the house too quiet to enable a patient to sleep, as if this is done the slightest noise is apt to awaken him. During sleep there is a reduced amount of blood in the brain, so that anything that tends to draw blood to other parts of the

body may help in promoting sleep ; for this reason a little food or warm milk, by drawing blood to the stomach and intestines, or a hot bottle to the feet, by drawing blood to them, may have the desired effect. A soft handkerchief folded and fastened firmly over the eyes, or a cold compress (*see* page 157) lightly placed over the eyes, especially if renewed once or twice, may be helpful. Gently rubbing the hands and arms, brushing the hair, sponging the face and hands, or reading aloud may be tried, often with satisfactory results.

Report the number of hours you know for a fact that the patient has slept ; the time you have reasonable grounds for believing he has slept ; his own account of the matter, and whether the sleep has been light, deep, broken or troubled.

vii. **Delirium.** This may be noisy or quiet : it may be low muttering, raving or maniacal. Another sign is frequent picking at the bed-clothes. Notice the time of its onset, its duration, when it is most frequent, and whether there is any cause which produces or aggravates the delirium.

viii. **Convulsions.** These are involuntary contractions of the muscles of the body and limbs. Notice whether they are general or limited to one part of the body ; the time of their occurrence

and their duration and whether there is any apparent cause.

A patient in a convulsion or fit should not be left unattended. Care must be taken that the patient does not injure himself and that the tongue is not bitten.

ix. **Pain.** Remember there is a great difference in the power of bearing pain; what is trifling to one may be agony to another. Notice the situation of the pain, and its character: it may be shooting or darting and coming on in paroxysms: or it may be gnawing and aching. Notice the time at which the pain begins and its duration: whether it occurs chiefly by night or by day: whether it is increasing or diminishing in severity: whether it is connected with anything the patient does, as coughing or taking food, or with external conditions, such as noise, light, movement; if it occurs after food, how long after a meal, whether a meal relieves the pain, or if it is aggravated by any particular kind of food.

Relief may be obtained by the application of heat or cold, hot drinks, rest or movement, rubbing or change of posture.

x. **The Pulse.** Note its rate and strength. It may be fast or slow, regular or irregular, and its beats may be full or strong, or almost imperceptible.



xi. **The Breathing.** Note the frequency and character of the respirations, which may be rapid or slow, regular or irregular: they may be deep or shallow, sighing or laboured, wheezing or hoarse; note too whether they are accompanied by pain or snoring.

xii. **Cough.** A cough may be hard and dry, or moist and accompanied by expectoration: it may be an irritating cough with tickling sensation in the throat, or it may be deep and hollow in its sound: note its frequency and the time at which it is most distressing: if it comes on in paroxysms or with a whoop or crow: if it is short, feeble, and frequent (hacking): if it is pain-

ful so that the patient obviously tries not to cough; and if it is associated with any change in the temperature, any alteration of position or with vomiting.



*Fig. 53.*—SPUTUM CUP.

xiii. **Expectoration.** The expectorated matter should always be received in a special vessel (*Fig. 53*) and kept for the doctor's inspection.

Note the ease or difficulty of expulsion; the quantity; whether it is watery or thick and sticky, or frothy or mixed with blood; the colour, whether pale or green or yellowish.

xiv. **The Tongue.** Always inspect the tongue before giving food : note its size and shape, whether it is large and flabby and indented by the teeth or pointed or ulcerated ; whether it is dry or moist or covered with fur ; note also if it is tremulous when it is protruded. Any difficulty in swallowing should be noted.

xv. **Vomiting.** Notice when vomiting occurs : if it is after taking food, how long after, and whether any particular article of food produces it ; observe whether it is preceded by a feeling of nausea, or is accompanied by pain ; whether vomiting relieves any pain which has been present ; whether there is straining or retching.

Notice the quantity and nature of the vomited matter and preserve it for the doctor's inspection ; it may consist simply of bile, food taken or phlegm ; it may contain blood, either like coffee grounds due to admixture with the stomach contents, or bright red, or it may be dark and foul-smelling like fæcal matter.

Vomiting may be relieved by keeping the patient lying down, loosening the clothes and affording fresh air. Give nothing by the mouth, though sucking small pieces of ice may be prescribed.

xvi. **The Bowels.** Note the frequency of the evacuations : whether they are accompanied by

straining or flatulence or pain ; notice the character of the stools, their colour and consistency, and whether blood is present.

xvii. **The Urine.** Notice how it is passed, easily or with difficulty ; observe the amount passed, and whether it is clear or turbid, its colour and whether there is any deposit from it, or if it is tinged with blood.

At the onset of an illness, as a matter of routine, preserve for the doctor's inspection the stools, and a specimen of urine passed three hours after a meal. Later on, do this only when directed, unless there is something special which the doctor should see.

xviii. **Bedsore.** Bedsore are most frequently met with in cases of paralysis or dropsy, or when a patient has to lie in one position for a long time. They generally occur over the lower part of the back, the heels, the elbows or where there is very little fat or muscle between the skin and bone. Bedsore frequently appear with surprising quickness and the nurse must be on her guard against them from the very first. While difficult to cure they are comparatively easy to prevent.

The chief causes are : (a) pressure which constricts the vessels and deprives the skin of its blood-supply ; (b) moisture, which softens the skin, whether due to perspiration, incontinence

of urine or faeces, or insufficient drying after washing; (c) crumbs and wrinkles in the bed-clothes which irritate the skin.

Always take precautions before the skin becomes reddened and bedsores form. If possible, the patient should frequently change his position. Keep the bed dry and free from wrinkles and crumbs. If the patient is suffering from a disease in which bedsores are likely to occur, relieve the tendency to pressure by using an air-cushion. Keep the skin clean and dry and dust with powdered starch or oxide of zinc: or rub into the skin methylated spirit and allow it to dry. If through the patient's inability to retain excretions it is impossible to keep the back dry, smear it freely with zinc ointment.

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## CHAPTER X

**FOOD**

FOOD has two main functions :—

1. To provide for the growth and repair of the tissues of the body.
2. To act as a source of energy which can be converted into heat and work.

In illness, the provision for the normal growth and repair of the tissues will require an extra amount of food to compensate for the additional wastage caused by the disease. It is essential, therefore, that the home nurse should understand how the food performs these important functions so that she may intelligently and adequately carry out her duties.

Food may be classified in various groups according to its nutritive constituents :—

1. **Proteins** contain a large proportion of nitrogen (hence the term nitrogenous foods), besides carbon, hydrogen and oxygen. They serve to form and build up the body and make good the wastage of the tissues. They are found in lean meat, white of egg, milk, some vegetables, especially the pulses (lentils, peas, etc.), cereals and cheese.

2. **Carbohydrates** (starches and sugars) consist of carbon, hydrogen and oxygen. They form the great bulk of ordinary diet and are chiefly concerned in supplying energy to the body. They are mostly of vegetable origin—for example, bread, potatoes, rice and sugar.

3. **Hydrocarbons** (fats). These also consist of carbon, hydrogen and oxygen, but a smaller proportion of oxygen than in the carbohydrates. They serve to produce heat and a certain amount of power. Examples of this class of food are cream, butter, fat meat and oils derived from vegetable or animal sources.

4. **Vitamins**. These consist of various chemical substances some of which are present in all natural foodstuffs, others in animal fats, certain fresh vegetables and fresh fruits. At present little is known concerning the chemical composition of these substances, although it is proved that their absence from food causes some diseases, and imperfect growth and development in children.

5. **Salts**, especially common salt, are essential to health and are usually added to the food; the various salts of the body, such as those of calcium, iron, sodium, potassium and phosphorus are derived from both nitrogenous and



non-nitrogenous foods. They help to build up the tissues of the body, to form the digestive juices and to assist in the control of the chemical processes in the body.

6. **Water** is an essential constituent of the body and is necessary for the due performance of all its functions. It serves for the solution and conveyance of food to the various parts of the body and also for the excretion of waste products. It is not only received into the body as a liquid but forms a large proportion of the solids taken. Meat contains 72 per cent. and bread 38 per cent. of water. Although a man may live for weeks without food the absence of water causes death in a few hours.

No one article of food contains the different nutritive constituents in proper proportion, and the deficiency of a particular constituent in one article must be balanced by an excess in another. A mixed diet is therefore essential—hence the usual combinations of bread and cheese, potatoes and beef, etc., in which the excess of carbohydrates in the bread and potatoes is balanced by the proteins and fat in the cheese and beef. Variety is of the greatest importance. An unvaried diet may be not only distasteful, but may have serious consequences as regards general health and recovery from disease.

## DIGESTION

In order that a person may benefit by food taken, the food must be **digested, absorbed and assimilated.**

The two great ends achieved by **digestion** are :—

1. To dissolve solids and make them capable of passing from the alimentary canal through the walls of the blood capillaries.

2. To render food capable of assimilation by the tissues, when it is brought to them by the blood.

These important functions are performed by the **Digestive System.**

## DIGESTIVE SYSTEM

**The Organs of Digestion** are the mouth, the teeth, the salivary glands, the pharynx, the œsophagus or gullet, the stomach, the liver, the pancreas, the small intestine into the commencement of which the ducts of the pancreas and liver discharge ; and the large intestine, the terminal portion of which is the rectum, while its orifice is called the anus. The path from the mouth to the anus is described either as the Alimentary Canal or the Digestive Tract.

**Digestion should begin in the mouth,** and does so when food is properly masticated. During the process of mastication food is cut up, ground by the teeth, and intimately mixed with saliva, which changes the insoluble carbohydrates (starches) into soluble sugar. If, however, food is bolted, this stage of digestion is imperfectly performed, and additional work is thrown on the other organs.

The food is next swallowed, that is, passed through the pharynx and gullet to the stomach, where it is acted upon by gastric juice. The principal constituent of gastric juice is pepsin, by means of which proteins are peptonized—that is, converted into peptone, a fluid capable of absorption into the capillaries.

The unabsorbed and partly digested food now passes into the first part of the small intestine, where it meets with (1) the bile, secreted by the liver, and stored in the gall-bladder; and (2) with the pancreatic juice, a fluid secreted by the pancreas, containing three ferments. Of these ferments one converts starches into sugar, completing the unfinished action of the saliva; another supplements the action of the gastric juice; and the third, in conjunction with bile, acts on the fat, thus rendering it capable of absorption.

The food, now completely digested and capable of absorption, passes along the remainder of the small intestine, from which it is gradually absorbed by vessels in its walls : some passes through the capillaries to the liver for further treatment, while some passes through other minute vessels to the large channel known as the thoracic duct which carries it into the large veins at the base of the neck. On reaching the lower end of the small intestine, the remainder of the food passes into the large intestine. This channel is not nearly so well adapted for absorbing food as the stomach and small intestine, but absorption is to some extent continued in it, so that by the time the lower part of it (rectum) is reached practically all the digested food has been absorbed, and there remains only waste matter, which is periodically got rid of through the orifice of the bowel, the anus.

The food absorbed by the blood is carried to all parts of the body (*see* "Circulation of the Blood," page 18), and is assimilated through the walls of the capillaries by the tissues. Assimilated food maintains and renews the tissues of the body, and provides heat and power. Food taken in excess of requirements throws an undue strain on the organs of digestion and excretion. An insufficient supply of food to the tissues causes

loss of weight and a diminution of heat and vitality.

Water and nitrogenous waste are secreted from the blood by the kidneys and passed into the bladder to be excreted as urine.

#### MILK AS A COMPLETE FOOD

Milk is such an important article of food that it is the subject of special regulations and supervision by the Health Authorities in England and Scotland. They are set out in Appendix 1.

**Milk contains all the constituents of a complete food**, and is so important a part of an invalid's diet that it is desirable that the home nurse should understand its composition and properties.

Protein is present in milk in two forms :—

1. Lact-albumen, which does not form a curd (coagulate) in the stomach, but does coagulate by heat (161° F.).

2. Casein, which does not coagulate by heat, but is coagulated in the stomach, the curd formed often proving difficult to digest.

Fat is present as cream, and readily separates when milk is allowed to stand.

Sugar is present as lactose, and is completely dissolved. It is not so sweet as ordinary sugar, and is liable to turn sour.

Salts are present in various forms (lime, soda, etc.).

Water forms the greater part of milk.

Amongst the bacteria sometimes found in milk as delivered to the customer are those of tubercle and enteric, in addition to the lactic acid bacillus which is almost always present, and is the cause of milk turning sour. The entry of bacteria is encouraged when milking has taken place in dirty surroundings, and when the milk has been much handled or has been long in transit to its destination, especially in hot weather.

It is essential that all vessels used to hold milk, whether the bucket into which it is drawn, the pan, bowl or bottle in which it is kept, or the cup or glass from which it is drunk, are spotlessly clean.

Furthermore, artificial pasteurization or sterilizing of the milk itself is usually regarded as essential, especially when the milk is to be taken by invalids or infants.

**Pasteurized Milk** is milk subjected to treatment by heat in order to kill any micro-organisms that may be present. The milk must be kept at a temperature between  $145^{\circ}$  F. and  $150^{\circ}$  F. for 30 minutes and then rapidly cooled. The effect is to kill nearly all bacteria, but not the spores from which they grow. No change in the

appearance of the milk can be detected, nor is the taste altered ; but if the temperature rises to 161° F. the lact-albumen will be coagulated.

**Sterilized Milk** is milk which has been placed in one or more closed receptacles, which are nearly immersed in water that is allowed to boil. After twenty minutes from the time the water boils the milk will be sterilized, and not only the bacteria but their spores will have been killed. Apparatus for sterilizing in this way can be procured in several forms with full directions. Much the same result is attained by boiling in a double saucepan, a cover being used to prevent scum from forming on the top of the milk. After sterilizing, the milk should be rapidly chilled to a temperature of 45° F., and kept in a cool place in a closely-covered sterile vessel.

**Peptonized Milk.**—When a patient is unable to digest milk it should be peptonized as follows :—

Pour the milk into a clean vessel which has been sterilized by scalding, and add a quarter as much water. Put in peptonizing powder in accordance with the directions regarding the quantity printed on the packet, and maintain the milk at a temperature of about 105° F. by keeping the vessel in a bowl of water as hot as the hand can bear. Stir for twenty minutes and then raise

the temperature of the milk to boiling point to arrest further action of the peptonizing agent and so prevent a bitter taste.

**Buttermilk** is milk deprived of the whole (or nearly the whole) of its fat, and is sometimes ordered in cases of chronic stomach or intestinal disorder. A regular supply can be obtained from a dairy where butter is made daily.

**Condensed Milk** is cows' milk with a large part of its water removed by evaporation. It can be obtained as sweetened whole milk, unsweetened whole milk, and sweetened separated milk. The last-named is quite unsuitable as food for infants, and the other forms should never be their sole diet.

**Desiccated Milk, or Milk Powder**, is portable, and keeps well. It contains all the constituents of cows' milk in a sterile and soluble form.

#### DIETS

The material needed for the building up of the body is known as **Food** ; when foods are combined for special purposes or for invalids it is termed **Diet**.

In disease the organs of digestion are usually weak, and fail to perform their proper functions, with the result that the patient is unable to digest



ordinary food, and, therefore, requires a special diet.

Special forms of invalid diet are :—

**a. Liquid.** Three pints of milk are essential to maintain a patient's strength during the twenty-four hours. With the doctor's sanction tea, beef tea, clear soup or broth, eggs, albumen water, barley-water, lemon or orange juice may be added or substituted.

**b. Light.** This includes tea, cocoa, coffee, lightly boiled or poached eggs, beef tea, clear soups, thin bread and butter, dry toast, steamed white fish, chicken, mince, jellies, milk puddings, porridge, junket, cream, grapes, bananas.

#### TO SERVE FOOD

Under the advice of the doctor, distribute judiciously over the day and night the amount of food ordered. A patient will not, as a rule, need to be given as much nourishment at night as in the daytime, sleep being generally more essential than food. Unless ordered to do so, never waken a patient to give him food. It is well to have a diet table showing exactly how much and when food is to be given.

All meals should be served punctually ; before they are brought into the sick-room, the patient's hands and face should be sponged.

Arrange the patient's tray neatly and make it look attractive.

Protect the bedding and clothing with a table-napkin.

If a hot meal is being given, ensure that the plates and dishes are hot, and that the patient does not burn himself. Do not serve more than one course at a time, nor too much of any one dish.

The feeding should not be hurried, and when the meal is over, the tray should be taken away at once. Do not leave any food in the sick-room.

Consistently with the doctor's orders, always have something available to be given before the desire for food has passed.

If the amount of liquid to be taken is limited, give the quantity ordered. Many people, especially children, dislike being stopped in the middle of a drink.

Never cook any food in the sick-room.

#### TO GIVE LIQUID FOOD

In raising a patient to drink, pass the forearm behind the pillow to support both the head and shoulders, and so avoid undue bending of the neck. If a patient is unable to raise his head

a china feeder (*Fig. 54*) is necessary : if none is available a small teapot is an efficient substitute.

1. Take the feeder in your right hand and

(a) if the patient is lying on his back, place your left forearm under the pillow and raise his head and shoulders ; or,

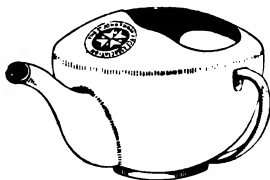
(b) if the patient is lying on his side, depress the pillow by the side of the

mouth, pass your forearm under the pillow and incline the head towards the feeder.

2. Place the spout of the feeder in the patient's mouth, and tilt the feeder slightly, allowing only a little fluid at a time to pass into the mouth for fear of choking the patient.

3. Withdraw the feeder from time to time, or, if preferred by the patient, lower the feeder to prevent the further flow of liquid until you have seen the act of swallowing.

Some patients take their nourishment better from a small glass tumbler, which should be only a quarter full. A glass tube bent at the end, a piece of fine rubber tubing, or even a long straw previously sterilized, through which the patient



*Fig. 54.*—FEEDING CUP.

can draw up the fluid himself, may be used. The straw should be burnt after being once used; the glass tube or rubber tubing should be boiled and kept in water. A skilful nurse readily discovers the way of feeding which is most comfortable and least fatiguing to the patient.

*If the patient is suffering from serious injury to the mouth or jaw :—*

1. Attach about four inches of sterilized rubber tubing to the spout of the feeder.

2. Turn the patient's head to one side.

3. Pass the little finger along the inner side of the cheek resting on the pillow, and gently press the cheek away from the teeth.

4. Pass the tubing along the side of the teeth between the cheek and gums, and very gently pour in one tablespoonful of the fluid at a time, so that the patient can swallow without the effort of drawing the liquid into the mouth.

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## CHAPTER XI

**BEVERAGES AND INVALID COOKERY**

BEVERAGES may be refreshing, nourishing, or stimulating.

*a. Refreshing.*

Beverages for this purpose should be taken in sips, and the patient urged to hold the fluid under the front of the tongue or at the back of the throat. The effect will be a refreshing sensation of coolness, whereas a large draught does not so well allay the thirst and may induce flatulence.

Rinsing the mouth with cold water will often effectually allay thirst.

Cold water and aerated waters.

Tea, hot or cold, with milk or a slice of lemon.

The juice of fresh fruits.—This may be taken undiluted or with water, plain or aerated. To make any of these effervescent, add half a teaspoonful of bicarbonate of soda to a tumblerful of the liquid.

Teas made from Jam.—Blackcurrant tea is especially suitable. Add a tablespoonful of jam to a pint of boiling water and allow to stand ; strain.

Toast Water.—Soak a slice of well toasted bread in a pint of boiling water ; stand till cold ; strain.

**Apple Water.**—Slice thinly an apple without peeling or coring ; pour over it a pint of boiling water ; stand till cold ; strain.

**Oatmeal Water.**—Add a tablespoonful of fine oatmeal to a pint of cold water ; stir well and allow to stand.

**Imperial Drink.**—Put a teaspoonful of Cream of Tartar, the juice of half a lemon, and one tablespoonful of sugar in a jug ; add one pint of boiling water ; allow to cool ; strain.

*b. Nourishing.*

Tea, coffee or cocoa made with boiling milk.

**Barley Water (thin).**—Add half a pint of boiling water to a teaspoonful of washed pearl barley, with a pinch of salt : stand by the fire for an hour, stirring occasionally : strain through fine muslin : allow to cool.

**Barley Water (thick).**—Boil slowly a heaped tablespoonful of washed pearl barley with a pinch of salt in a quart of water until a quarter has boiled away ; allow to cool.

Either of these may be flavoured with a little lemon rind.

**Albumen Water.**—Stir the whites of two fresh eggs in half a pint of cold boiled water, to which a pinch of salt has been added ; leave for half an hour.

Gruel (Oatmeal) may be made with milk or



with water. Mix into a paste with water two tablespoonfuls of fine oatmeal or groats in a saucepan ; add a pint of milk or water, as ordered, and boil gently for half an hour, stirring frequently. Flavour with salt or sugar.

**Egg Flip.**—Remove the speck ; beat up a new-laid egg with a teaspoonful of sugar ; add half a pint of milk and, if ordered, a tablespoonful of brandy ; stir well.

Whey is sometimes used as a substitute for milk, as it is easily digested and affords some nourishment. It contains lact-albumen, lactose, salts, and sometimes a little fat, and differs from milk inasmuch as casein (which clots in the stomach) and most of the cream have been removed. To make it, add a dessertspoonful of rennet to a pint of fresh, unboiled, whole or separated milk at a temperature of about 95° F. In about an hour or an hour and a half a curd will have formed, with the result that the milk will now be what is known as Junket.

Junket is placed in an earthenware pudding basin over a saucepan of boiling water : by degrees the curd will shrink into a solid mass, leaving the whey. Strain before using. Milk may be diluted with whey provided that the latter has been raised to a temperature of 150° F. to stop the further action of the rennet, which

would otherwise coagulate the milk. Care must be taken not to heat the whey up to 161° F. or the lact-albumen will clot.

*c. Stimulating.*

Tea.

Coffee.

Beef Tea (quick).—Remove the fat and skin from half a pound of gravy beef, which should be cut in small pieces and placed in a saucepan ; add sufficient water to cover the meat and a little salt ; while warming over a moderate fire, press out the juice of the meat for ten minutes ; remove the meat and boil the liquor for one minute.

Beef Tea (slow).—Cut up finely a pound of gravy beef, removing the fat and skin ; put it into a stone jar with a pint of cold water, half a teaspoonful of salt, and cover the jar. Let it stand for fifteen minutes, stir well, and allow to simmer gently in a “ hot water bath ” for three hours. When cold, skim, strain, and heat up as required.

Meat Essences and Juices.

## SOUPS

The basis of all nourishing soup is **stock**, a liquid formed by allowing meat and bones covered with water to come slowly to the boil and simmer for several hours. It should be

made in a pan or jar with a close-fitting lid, and in the case of invalids, must be "first" stock and not more than twenty-four hours old. It should be made the day before the soup is required, allowed to cool and be kept in a cool place. When required for use, skim off the fat, heat it in a saucepan and add the necessary ingredients to make the required soup. This may be:—

*a. Clear.*—Flavour the stock with celery, carrot, turnip, sweet herbs, pepper, salt and two eggs beaten with a whisk to a froth. Boil gently for ten minutes and strain. This makes a "fine consommé" or clear soup.

*b. Purée.*—These are vegetable soups thickened with the ingredients of which they are made (Peas, Lentils, etc.) after passing them through a fine sieve.

*c. Peptonized.*—To each pint of stock add 1 tablespoonful of Liquor Pancreaticus and 20 grains of Bicarbonate of Soda. As soon as the right stage of peptonization is reached boil up the soup at once to stop the action, or it will have a bitter taste.

*d. Broths.*—The liquor in which poultry, meat, veal, etc., have been boiled, with the addition of vegetables, barley, rice, which are cooked in the liquor. Strain and chop the vegetables into small pieces and add to the strained broth.

Of the various **methods of cooking** the most beneficial for invalids are steaming and boiling as they render the food more easily digestible ; as it is desired to extract the juices from the food, the cooking should be slow all the time. For convalescents, food may be roasted or stewed, but frying renders it less digestible.

#### FISH

Whiting, Soles, Brill, Plaice, Dabs and Fresh Haddock are the easiest to digest since they contain little fat. Oysters uncooked are most nourishing and are easily digested, but all other varieties of shell-fish are harmful

Fish must be well cooked always ; it is best boiled or steamed.

#### MEAT

Lamb, Veal and especially Tripe are the most digestible ; mutton is more easily digested than beef, but pork is never allowed.

#### POULTRY

Poultry is easily digested with the exception of ducks and geese.

#### EGGS

Eggs should be steamed, lightly boiled or poached.

**Beer Tea Custard:** beat the yolks of 2 eggs and the white of one thoroughly, pour on  $\frac{1}{4}$  pint of beef tea, season to taste. Pour into a well-buttered cup, cover with greaseproof paper and stand the cup in a saucepan with a little boiling water. Steam very gently for twenty minutes. Turn out carefully.

### VEGETABLES

Most vegetables are permissible for convalescent patients, but it is very essential that they be well and properly cooked.

### PUDDINGS

All farinaceous puddings must be well cooked to burst open the starch granules.

Jellies are useful but their nutritive value is not great.

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## CHAPTER XII

## METHODS OF TREATMENT

TREATMENT of illness falls under one or more of three heads :—

- (1) Removing or neutralizing the cause ;
- (2) Promoting conditions most favourable to Nature's effort to effect a cure ;
- (3) Supplementing Nature's effort.

## I. REMOVING OR NEUTRALIZING THE CAUSE

**Remove all sources of harm and provide an antidote to any poison.** If the patient is in a close, stuffy or overcrowded room, he must be moved to one which is bright and well ventilated ; if it is a disease due to climatic conditions, as malaria, he must be taken from the injurious surroundings ; if the illness is due to any growth, an operation may be necessary for its removal, or to repair any lesion in an organ of the body. Many diseases are due to the presence of germs, in which case efforts must be directed to prevent their growth and render them innocuous. **In infectious cases precautions must be taken that these germs are not disseminated so as to infect other persons.**

2. PROMOTING CONDITIONS MOST FAVOURABLE  
TO NATURE'S EFFORT TO EFFECT  
A CURE—REST

In addition to cleanliness and the provision of proper food, air and warmth, the body requires adequate periods of **rest** to enable it to perform its normal functions. Work without rest (overwork), whether of the body as a whole or of a single organ, results in fatigue, and, if continued, in ill-health and disease ; rest is, therefore, an important factor not only in maintaining good health but in the nursing of a patient and assisting him to regain his usual health.

**Rest may be general**, that is, more or less affecting the body **as a whole** ; putting the patient to bed in cases of illness, an extra hour in bed, rest after a meal are examples.

**Rest may be local** (partial), as the use of splints, bandages and slings in the case of fractures, or it may be rest for one of the organs of the various systems of the body, such as the provision of light, nourishing diet in some diseases of the digestive system (rest for the stomach).

In settling the plan of treatment, the doctor will provide for adequate periods of rest, but there are many ways in which a resourceful



nurse can assist the patient to rest with added comfort without interfering with the plan of treatment.

Physical (muscular) rest can be aided by the judicious use of additional pillows and hot-water bottles, and by carefully changing the position of the limbs or of the patient.

Mental rest will be helped by the use of cold compresses to the head and eyes, darkening the room, quietness, light occupations with frequent changes, interesting (but not exciting) books.

The home nurse should remember that improvement in the patient's health does not always mean improvement in the temper, and her ingenuity and resource will often be taxed to the utmost to avoid boredom and irritability (mental unrest) in her patient, especially during convalescence. She should therefore try to devise means by which the patient's interest can be aroused and maintained—quiet conversation, books, hobbies, flowers and plants, changes of interesting occupations, observation of Nature, will all help. She should avoid as far as possible all conversation about the patient's or others' illnesses, and encourage a healthy mental outlook both as to the patient's condition and on life in general.

## 3. SUPPLEMENTING NATURE'S EFFORTS

**Medicines** are introduced into the body in several ways :—

A. By the mouth	Swallowed
B. By the air passages	Inhaled
C. Under the skin	Injected
D. Through the skin	Inuncted
E. By the rectum	Injected

It is therefore important for the nurse to know the following table of Measures :—

## MEASURES

1 minim	1 measured drop					
60 minims	1 drachm	1 tea-spoon				
120 "	2 "	2 "	1 dessert spoon			
240 "	4 "	4 "	2 "	1 table-spoon	½ oz.	
480 "	8 "	8 "	4 "	2 "	1 "	
					20 "	1 pt.
						8 pts. 1 gal.

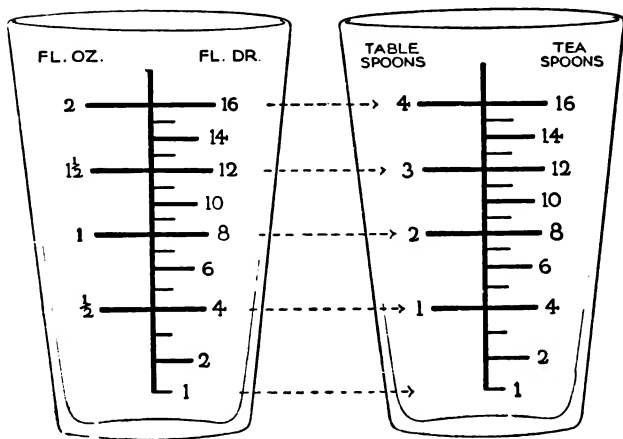
## A.—BY THE MOUTH

## (ORAL ADMINISTRATION OF MEDICINES)

The great majority of medicines are given by the mouth in the form of Liquids, Pills, Powders, Tablets and Capsules.

*a. Liquids.*

The nurse must exercise the greatest *accuracy*



*Fig. 55.*—MEASURE GLASS.

*in the administration of medicines* by observing the following rules :—

i. Before giving medicine always read the label—never trust to recognizing drugs by appearance or smell, nor to remembering the dose.

ii. When no precise directions have been received as to when medicine is to be taken, give it as follows :—

Medicines to be taken	Times—	
every 2 hours	2, 4, 6, 8, 10, 12	Day & Night
every 3 hours	3, 6, 9, 12	„ „
every 4 hours	10, 2, 6	„ „
3 times a day	10, 2, 6	None during night
4 times a day	10, 2, 6, 10	None during night

iii. Give “ after food ” medicines immediately after food, and “ before food ” medicines twenty minutes before meals.

iv. Do not waken the patient to give him his medicine unless instructed to do so by the doctor.

v. If a patient misses a dose of medicine, do not give him a double dose next time.

vi. Shake all fluid medicine. Medicines with

sediment, and effervescing medicines, must be taken as soon as they are poured out.

vii. When pouring out medicine, keep the labelled side of the bottle uppermost, so that no fluid may run over the label. Stand the medicine glass on a level surface while pouring out medicine, in order to ensure correct measurement. This is important, as, if the glass is in a slanting position, too much or too little medicine will be given.

viii. See the patient take his medicine.

ix. Re-cork and replace the bottle immediately.

x. Wash and dry the medicine glass after use. Care in *storing medicines* is also important.

i. In an infectious case, keep separate the medicine glass, the bowl in which the glass is washed, and the cloth with which it is dried.

ii. Keep medicine for internal use apart from outward applications, whether poisonous or not.

iii. Keep poisons in bottles of a distinctive shape and colour and in a locked cupboard ; be sure they are labelled " Poison."

If the mouth is dry, give a small drink of water before the medicine.

Nauseous medicines, or those containing iron, which may blacken the teeth, can be taken through a straw or glass tube.

Patience. ingenuity and tact will generally

induce children to take medicine. Never use force or deceit, nor put medicines into milk or any essential part of invalid diet, as this might turn a child against his food.

**b. Pills.**

These contain drugs in a solid form and are intended to be swallowed whole. They are more easily swallowed when placed upon the front part of the tongue instead of on the back part, as is so often done in the belief that it aids swallowing. The patient should take a small mouthful of water, then place the pill in the mouth, and swallow the two together. The plan of putting the pill into a piece of bread half-masticated by the patient and then swallowing the whole is sometimes successful.

**c. Powders.**

These should be shaken on the back of the tongue and washed down with a drink of water. In cases of difficulty, they may be mixed with a little jam or honey

**d. Tablets.**

These may be taken whole as pills or crushed as powders. It is a safe rule that tablets given for throat or chest troubles should be sucked slowly and not crushed or crunched.

**e. Capsules.**

Small measured doses of medicine can be

obtained enclosed in thin gelatin capsules. They render medicine quite tasteless, are readily swallowed, and, moreover, are easily stored and carried.

*f.* **Oils.**

To administer Castor Oil or Cod-liver Oil, rub a little of the juice of half a lemon or orange over the inside and edge of a medicine glass, squeeze the remainder into the glass, and pour in the oil, taking care not to let it touch the edge or side of the glass. Give the patient a little piece of the other half lemon to suck, and squeeze the juice of the remainder on to the oil. The patient should then gulp down the contents of the glass.

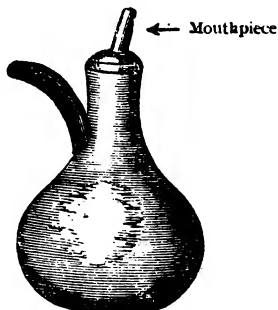
For oily medicines keep a special glass. It can readily be cleaned with salt and water.

## B.—BY THE AIR PASSAGES

### (INHALATIONS)

Medicines which are **inhaled** (that is, drawn into the lungs with the air at each inspiration) are almost entirely reserved for cases in which these organs are affected, and are intended to act upon the lungs. Inhalations are also used for sore throats and when the larynx is inflamed.

When it is desired to introduce medicine in the form of vapour into the lungs, an inhaler is used. A useful form is known as Nelson's Inhaler (*Fig. 56*), which is made of earthenware. Very hot water is poured in up to the lower end of the spout, and the drug ordered is added. The cork, through which the mouthpiece passes, is then inserted. The patient closes his mouth over the mouthpiece and inspires deeply through it.



*Fig. 56.* --NELSON'S INHALER.

An Inhaler may be improvised by placing a pint of boiling water in a quart jug, and adding the prescribed amount of the inhalant. Place a towel round the mouth of the jug, and inhale the steam for ten minutes, breathing in and out through the nose. It is an advantage to cover the head and shoulders with a shawl or towel.

**Spraying is a modified form of inhalation,**



and is intended for applying the medicament locally to the nose and throat.

Sprays are used to distribute liquids in small particles over a part. The apparatus can be obtained in a great variety of forms.

*To spray the nose :—*

1. Seat the patient with his head upright and his mouth open.

2. Expel a little fluid from the spray to ensure that the apparatus is working properly.

3. Insert the nozzle about half an inch into each nostril in turn, pointing it towards the patient's face, not upwards, and use the quantity of fluid ordered.

4. Direct him not to blow his nose.

*To spray the throat :—*

1. Expel a little fluid from the spray to ensure that the apparatus is in working order.

2. Instruct the patient to open his mouth wide, to hold down his tongue with a depressor placed well over it and to draw in his breath.

3. Instruct the patient to breathe quickly through the mouth while using the spray.

The doctor may instruct the nurse to cleanse the nose or throat before applying the spray.

*To cleanse the nose :—*

Put a towel round the patient's neck.

If a nasal douche is not readily available,

the patient should sniff the prescribed lotion gently through the nose from the cupped palm of a carefully washed hand and allow it to escape through the mouth.

To cleanse the throat (gargling):—

Half fill a glass with the prescribed gargle, and fill it up with warm water. Instruct the patient to take a deep breath and then a mouthful of the gargle. Throwing his head well back, he must breathe out through the mouth, causing the liquid to bubble, then eject the fluid. Repeat two or three times.

### C.—UNDER THE SKIN

#### (HYPODERMIC INJECTIONS)

The drugs to be administered are **injected** under the skin by means of a hypodermic syringe. Absorption into the circulation is very rapid and it is used mainly in cases of emergency, for the relief of pain or to stimulate the heart. It is outside the scope of home nursing, and is performed under medical supervision.

### D.—THROUGH THE SKIN

#### (INUNCTION)

The portion of skin to be treated is washed with hot water and thoroughly dried, so as to

stimulate the circulation **in the skin** in order that the medicament may be quickly **absorbed**. The part must be thoroughly massaged with the palm of the hand and the finger tips so that the **ointment is rubbed into** the skin and not left on it. The hands of the home nurse must be thoroughly and carefully washed afterwards.

## E.—BY THE RECTUM

### (RECTAL ADMINISTRATION OF MEDICINES)

Drugs are introduced into the lower bowel in the form of **suppositories** or an **enema** (plural, **enemata**).

**Suppositories** are small cone-shaped bodies used for administering drugs by the rectum. The anus and suppository are greased with a little oil or vaseline, and the suppository is inserted point upwards into the anus by the nurse's index finger, which is withdrawn when the suppository is felt to slip away from it.

The apparatus for the administration of **enemata** is usually (i) a Higginson's syringe, or (ii) a funnel, tubing and catheter.

(i) A Higginson's syringe (*Fig. 57*) consists of (1) a bone nozzle about three inches long; this may be introduced into the rectum, or a catheter

may be attached to it, to enable fluid to be injected higher into the rectum ; (2) a length of india-rubber tubing ; (3) a bulb ; (4) a shorter length of tubing fitted with a metal valve (A).

Before using the syringe, insert the valve end into the bowl containing the fluid to be injected, and pump some of it through the syringe to expel the air. When the fluid flows through noiselessly it is safe to proceed with the enema.

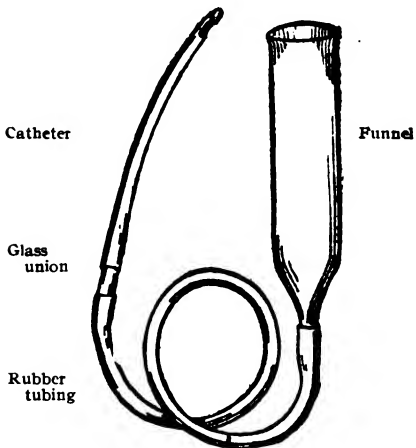


*Fig. 57.*—HIGGINSON'S SYRINGE.

ii. Funnel, tubing and catheter (*Fig. 58*). Connect a glass funnel with a soft rubber catheter, Number 10 or 12, by means of a length of rubber tubing and a glass union. Test for leakage at the joints by running water through. The rate of flow is regulated by the height to which the funnel is raised above the patient. The catheter is passed for a length of eight inches into the rectum.

## GENERAL RULES FOR ADMINISTERING AN ENEMA

1. Make sure that the hot-water bottle in the bed is really hot, as patients sometimes collapse after an action of the bowels.



*Fig. 58.*—FUNNEL, TUBE AND CATHETER.

2. Prepare the apparatus and the enema, which, unless ordered to the contrary, should be at a temperature of 100° F. in a bowl or jug.

3. Put under the patient a mackintosh with a warmed sheet folded in four over it.

4. Place a bed-pan under the bed.

5. Turn down the bed-clothes and cover the patient with a blanket, which can be easily folded back to leave the buttocks free.

6. Let the patient lie on his left side and draw up his knees ; then, placing your hand under his hip, draw his buttocks on to the edge of the bed.

7. Smear the nozzle or catheter with oil or vaseline, and **gently** insert it into the anus, slightly backwards and upwards. Inject the fluid, which should be at a temperature of 100° F., very slowly, never allowing the valve end of the syringe to get uncovered or the funnel to become empty lest air rush in. If the patient cannot be turned on his side, the enema can be administered as he lies on his back by raising his leg, passing your hand under it and inserting the nozzle or catheter into the rectum.

8. Before withdrawing the nozzle or catheter, nip the rubber tubing near it between the thumb and finger, to prevent any escape of fluid into the bed.

9. Press the buttocks together, or press a clean towel against the anus, to assist retention of the enema.

After use (i) wash the syringe by pumping

clean water through it, and hang it up with the nozzle downwards by means of a small loop of tape at the valve end of the syringe ; or (ii) wash the catheter by holding it eye uppermost under a cold-water tap, and boil it before putting it away.

#### VARIETIES OF ENEMATA

- a.* Purgative - To produce an action of the bowels.
- b.* Anodyne - To relieve pain or to check diarrhœa.
- c.* Stimulant - To stimulate a patient during collapse.
- d.* Nutrient - To feed a patient when unconscious, or in uncontrollable vomiting, and in some diseases of the stomach.

#### *a.* Purgative.

##### 1. Soap and Water Enema.

To prepare :—

Pour  $2\frac{1}{2}$  pints of warm water into a basin and stir thoroughly into it 1 ounce of thinly sliced yellow soap. Two pints only should be given, the remaining half-pint being left to cover the valve of the syringe. A child should be given 2 ounces for every year of his age.

To administer :—

- i. Use a Higginson's syringe.
- ii. Encourage the patient to try not to use the bed-pan immediately, but never refuse it when asked for.
- iii. Remove the bed-pan after use, cover it over and place it under the bed while you wash between the buttocks.
- iv. It may be advisable to repeat the enema in two hours if the bowel has been insufficiently cleared.

## 2. Olive or Castor Oil Enema.

Used when the rectum is full of hard fæces. The amount ordered—usually 6 ounces—is warmed by standing the vessel containing it in a basin of hot water. It is administered by a funnel, tube and catheter, and is followed in half an hour by a soap and water enema.

## 3. Glycerin Enema.

Used largely as a purgative for children. One or two teaspoonfuls, warmed by standing the glass which contains it in a basin of hot water, are given by means of a small glass or vulcanite syringe, care being taken to avoid the entry of air.

## b. Anodyne.

### Starch and Opium Enema.

Used to check diarrhœa. A teaspoonful of starch is mixed smoothly with five ounces of cold



water. It should be then brought to the boil, a teaspoonful of tincture of opium (laudanum) added, and stirred carefully till the mucilage is translucent. It can be prevented from stiffening as it cools if a teaspoonful of cold water is added while stirring vigorously. It is administered at a temperature of  $100^{\circ}$  F. with a funnel, tube and catheter.

**c. Stimulant.**

**Saline Enema.**

Used in collapse and to counteract shock. One teaspoonful of common salt is dissolved in a pint of water to form "normal saline," i.e., a salt solution of the same concentration as the blood plasma. It is prepared at a temperature of  $103^{\circ}$  F., and administered slowly, at low pressure, by funnel, tubing and catheter. The addition of half to one ounce of brandy is sometimes ordered for greater stimulation.

**d. Nutrient.**

**Saline and Glucose Enema.**

If an enema of a nutrient nature is required, one ounce of glucose is added to nineteen ounces of normal saline. The lower bowel only readily absorbs water, salts and glucose, and therefore the saline and glucose enema has superseded the former nutrient enemata of peptonized or pancreatized foods, such as milk, eggs or beef-tea.

It is administered by a funnel, tube and catheter, and must be given slowly.

Before administering any nourishment by the rectum it is necessary that the lower bowel be clear of fæces, so warm water or boracic lotion (ten grains to one ounce) is slowly poured in with a funnel, tubing and catheter. By lowering the funnel before it is quite empty the water runs out again, and as soon as it returns clear the enema may be given. Patients continuously fed by enemata should, in addition, have the bowel washed out by warm water once in every twenty-four hours.

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## CHAPTER XIII

## EXTERNAL APPLICATIONS

**Cold, Heat, and Counter-irritants** act by modifying the supply of blood to the surface of the body and so have a direct effect on the quantity present in the deeper organs. When **cold** is applied the amount of blood in the capillaries is lessened, so that there is decreased evaporation and the sensibility of the part is reduced. When **heat** is applied, the capillaries of the skin are dilated and more blood is brought to the surface so that there is greater evaporation from the skin with consequent reduction of the body temperature: there is also an increase in the sensibility of the part. When a **Counter-irritant** is applied, blood is drawn to the surface, thus relieving congestion in the deep parts and lessening the pain of deep-seated inflammation. At first the skin is reddened and congested, but, if the action is prolonged, a blister will be formed.

The synopsis of this chapter on the next page has been included with a view to simplifying the study of its contents.

**COLD**

- A. General** (to the whole body)
  - i. Cold bath
  - ii. Cold sponging
  - iii. Cold pack
- B. Local** (to the part affected)
  - i. Cold compress
  - ii. Ice-bag

**HEAT**

- A. General** (to the whole body)
  - 1. Dry
  - 2. Moist
    - i. Hot bath
    - ii. Hot sponging
    - iii. Hot pack
    - iv. Vapour bath
    - v. Medicated baths
      - (a) Mustard ; (b) Brine ; (c) Alkaline
- B. Local** (to the part affected)
  - 1. Dry
  - 2. Moist
    - i. Fomentations
      - (a) Plain ; (b) Boracic ; (c) Turpentine
    - ii. Poultices
      - (a) Linseed ; (b) Bread ; (c) Mustard
      - (d) Medicated clay
    - iii. Medicated baths
      - (a) Boracic acid ; (b) Carbolic acid

**COUNTER-IRRITANTS**

- i. Liniments
- ii. Capsicum
- iii. Iodine
- iv. Mustard leaf
- v. Mustard plaster
- vi. Spanish Fly
  - (a) Plaster ; (b) Fluid

## COLD

On exposure to cold there is increased oxidation of the tissues of the body, a lessened supply of blood to the surface and an increase in the amount of carbonic acid gas given off by the lungs. It may be used to abstract heat from the whole of the body generally and so reduce temperature. Or it may be applied locally. It is used as :—

i. *Stimulant*, to excite increased activity of the vital functions by dashing cold water on face and chest, as in fainting, shock, opium poisoning.

ii. *Tonic*, to produce reaction, as in a cold bath.

iii. *Febrifuge*, to reduce temperature, by abstracting heat from the whole body, as by cold pack or cold bath.

iv. *Styptic*, to arrest hæmorrhage, by contracting the vessels and lessening the supply of blood to the part.

v. *Astringents*, to lessen congestion by causing contraction of the tissues, as in hernia.

## A. APPLIED TO THE WHOLE BODY

**Cold** may be applied **generally** (to the **whole** of the body). It reduces temperature, quietyens the pulse, abates restlessness and induces sleep.



i. **Cold Bath.** The temperature should be from  $70^{\circ}$  F. to  $50^{\circ}$  F. The first sensation is one of shock or chill, followed by a glowing exhilaration, and, if prolonged, by depression. It should not be continued for more than 3 to 5 minutes.

ii. **Cold Sponging.** In sponging proceed as follows :—

1. Remove all the bed-clothes except a blanket to cover the patient, and the under-blanket below which a mackintosh should be placed. Remove the pyjamas or night-dress.

2. Sponge first the face and dry it ; then sponge downwards, neck, arms, trunk, to the feet, lifting the blanket as necessary with the one hand and sponging with the other with long sweeping strokes.

3. Keep the sponge fairly full of water and use no soap, as the object of sponging is to reduce temperature, not to cleanse the patient.

4. Continue for twenty minutes.

5. After sponging do not rub the skin quite dry. It should be left moist—not wet.

6. Put the patient to bed in dry clothes.

7. Give him a drink of cold water, and encourage him to sleep.

Sponging may be done either with cold or tepid water, but the latter is more frequently used as it need not be done so quickly. The

temperature of the water should be 85° F. to 92° F. and the addition of vinegar (a teaspoonful to a quart) will prove refreshing.

### iii. **Cold Pack.**

1. Remove all the bed-clothes except a blanket to cover the patient, and the under-blanket below which a mackintosh should be placed. Remove the pyjamas or night-dress.

2. Wrap him in a sheet wrung out in cold water.

3. Keep him thus for thirty to forty-five minutes and watch carefully for signs of faintness (taking the temperature in the mouth frequently). Should any shivering be noticed, remove the cold sheet and substitute warm blankets and hot-water bottles.

4. Quickly dry and wrap him in warm blankets.

This method is frequently used in cases of rheumatic fever : but if the patient cannot be moved, pack the front of the body and each joint.

## **B. APPLIED TO THE PART AFFECTED**

The **local application of cold** is used to allay any local inflammatory condition ; for, as it evaporates, heat is carried off from the part to which it is applied. It may be used in the following ways :—

- i. **Cold Compress** : wring three or four

tolds of linen nearly dry out of cold water and bandage in position. Compresses must be kept cool and moist, and a second piece of linen should be soaking in readiness to take the place of the first when dry. The effect of a cold compress is enhanced by adding one part of methylated spirit or Goulard water to three parts of water as these increase evaporation. If a wound is present, moisten the linen with a clean piece dipped in cold sterile water: do not wring out a soiled piece in the clean water.

ii. **Ice-bag.** The ice-bag (*Fig. 59*) must not



*Fig. 59.*—ICE-BAG.

be more than half filled and a teaspoonful of salt may be added to prevent the ice melting too quickly. The bag should be suspended from a cradle or tied to the head of the bed, so that its entire weight does not rest on the affected part. The ice must never be allowed to melt entirely,

otherwise the temperature of the water will rise to that of the part with which it is in contact. Never place an ice-bag next the skin: place beneath it a piece of lint which must be kept dry and frequently changed. An ice-bag must not be used too long without intermission, or it may produce loss of sensation and possible gangrene. Ice is best kept in a dark cool place and on a grating or inclined plane, so that the water can run off. It is most easily broken by a pointed instrument, as a strong needle.

## HEAT

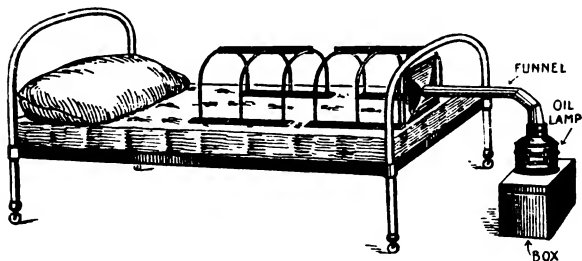
**Heat** may be applied **dry** or **moist**, and **generally** (to the whole of the body) or **locally** (to the part affected).

### A. APPLIED TO THE WHOLE BODY

1. **General** application of **dry** heat dilates the vessels of the skin, produces perspiration and so reduces temperature.

A **hot-air bath** (*Fig. 60*) is the best example of the general application of dry heat. Remove the sheets, place a mackintosh under the blanket, strip the patient, lay a long cradle in the bed, with a covering blanket tucked well in all round. Place the heating apparatus at the foot of the bed.

The temperature should be from  $100^{\circ}$  to  $160^{\circ}$  F. Keep the patient in this for twenty minutes, then allow time for free perspiration and sponge down



*Fig. 60.*—HOT-AIR BATH.

with hot water, gradually changed to cool. Dry and dress the patient and re-make the bed.

2. **General** application of **moist** heat also dilates the vessels of the skin and produces perspiration. In addition it has a most soothing effect after muscular effort or mental excitement.

i. **Hot Bath.** Always use a bath thermometer and keep the bath at the temperature ordered by slowly pouring in hot water at the side so as not to scald the patient. He should not be allowed to remain in the bath for more than ten minutes, and on coming out a warm

sheet should at once be thrown round him. He should then be dried and put into bed as quickly as possible. The temperature should be  $98^{\circ}$  F. to  $105^{\circ}$  F. Guard against chills and never leave a sick person unattended in the bath for fear of his fainting.

ii. **Hot Sponging.** Remove the bed-clothes except the blankets and place a mackintosh below the under-blanket. Strip the patient and sponge the whole of the body with warm water to which a little vinegar may with advantage be added. Proceed as in rules for cold sponging.

iii. **Hot Pack.** Place a blanket over a mackintosh sheet on the bed. Remove bed-clothes except the blankets and place a mackintosh below the under-blanket. Strip and wrap the patient in a sheet just wrung out of hot water, and surround him by hot-water bottles for half an hour. Copious perspiration having set in, rub the patient down with hot flannel and, after putting him into warm woollen night-clothing, place him between dry blankets.

iv. **Vapour Bath.** This may be given by any means that provide for the patient, with the exception of his head, being surrounded by steam. The safest method of improvising a vapour bath is to place a foot-bath containing boiling water beneath a wooden chair, on which the

patient sits with his feet on a foot-stool. He is covered, with the exception of his head, with a sheet reaching to the ground. Bricks should be heated in a fire and put into the water from time to time to maintain its temperature.

v. **Medicated Baths.**—Medicaments are frequently ordered to be added to warm baths. Those most frequently used are the following:—

a. **Mustard.** Mix 1 oz. of mustard to a paste with cold water and add to each gallon of warm water. Used as a bath for mild counter-irritation and stimulation.

b. **Brine.** Add 6 lb. of common salt or 3 lb. of sea salt to 10 gallons of water. Useful as a general bath in cases of rheumatism, after prolonged exercise and as a restorative in children's ailments.

c. **Alkaline.** For a strong alkaline bath useful in rheumatism, add 2 oz. of carbonate of soda (washing soda) to 10 gallons of water. For a weak alkaline bath, to allay irritation in skin affections, add 2 oz. of bicarbonate of soda (baking soda) to 10 gallons of water.

## B. APPLIED TO THE PART AFFECTED

i. **Local application of dry heat.** Hot-water bottles are used to apply heat to the part, and so relieve the pain and aid circulation.

2. **Local** application of **moist** heat. The effect of the local application of moist heat is to soften the skin and relieve the tension and pain of local inflammation, whether it be superficial, as an abscess, or deep-seated, as pleurisy or pneumonia. Its early application will tend to avert or shorten inflammation. Inflammation is Nature's way of fighting against septic matter present in the body.

There is dilation of the blood-vessels with a considerable flow of blood to the affected part. White corpuscles and serum come out of the blood-vessels into the tissues, there to attack the germs or poison; the blood-vessels become blocked with corpuscles (mostly red) and clotting ensues.

If the corpuscles are quickly successful, they return to the blood-vessels and inflammation at once subsides. They may, however, have to fight hard, and the casualties of the combat may lead to enlargement of the part; or pus may be formed from the dead bodies of the corpuscles and their enemies, or even tissue may die and a slough be formed.

**Moist heat** may be applied **locally** as---

i. **Fomentations.**—

a. *Plain.*—Take a basin, place a towel over it; lay upon the towel a piece of flannel folded



several times until it is of the size to cover the area to be fomented. If the flannel extends much beyond the edges of the basin it must be further folded. Pour boiling water upon the flannel until it is completely saturated, and fold the towel over it. Then turn the ends of the towel in contrary directions until all the water is wrung out of the flannel into the basin. This is important, as any water left in would result in blistering the patient. The towel may have wide hems at the ends, through each of which a stick may be run to afford more power in wringing.

Shake out and re-fold the flannel; lay it on the part to be treated; cover it with jaconet, oiled silk or grease-proof paper extending for half an inch beyond the edges of the flannel; cover the jaconet, oiled silk or grease-proof paper with cotton-wool extending beyond its edges; finally secure the whole by a bandage, or, if the abdomen or chest is being treated, by a many-tailed bandage.

To ensure the fomentation being hot, always bring the bowl and hot water to the patient's bedside and wring the fomentation out there.

Fomentations cool quickly, and so require frequent renewal, especially when pain is acute.

*b. Boracic.*—Use boracic lint instead of flannel for the fomentation.

*c. Turpentine.*—Sprinkle a teaspoonful of turpentine evenly all over the flannel, then thoroughly soak with boiling water, wring out as dry as possible, shake out the steam and apply to the part for twenty minutes. The corner must be raised after ten minutes to note any undue redness. Warm wool must replace it.

ii. **Poultices.**—

*a. Linseed.*—The requisite materials are crushed linseed, a basin, a kettle of boiling water, a spatula or table knife standing in a jug of hot water, a piece of lint or old linen cut slightly larger than the area to be covered, jaconet, oiled silk or grease-proof paper, cotton-wool and bandages, and a board or wooden table. Pour boiling water into a heated basin, and shake the linseed into it, stirring at the same time. When the linseed is mixed quite smoothly and comes away clean from the sides of the basin, empty it out on to the piece of lint on the table, and spread it quickly and evenly with the hot spatula. The layer of linseed should be half an inch thick, and it should be spread to within one inch of the edges of the lint. Fold the uncovered edges of the lint neatly over the edges of the linseed and draw it on to the palm of the hand, linen side downwards; turn it gently over on the patient's skin; cover it with the jaconet, oiled silk

or grease-proof paper, then with cotton-wool or flannel, and hold in position with bandages.

If the poultice has to be made outside the patient's room, carry it in between two hot plates.

When the poultice has to be changed, undo the bandages, but do not take off the cold poultice till the fresh one is ready.

Poultices need changing at least every four hours.

*b. Bread.*—Shake bread-crumbs into a bowl of boiling water and stir well. Cover and place it over a saucepan of boiling water to swell for at least fifteen minutes. Squeeze the water out and then spread with a hot spatula on a piece of warm linen. To prevent the bread sticking, a little oil or vaseline can be spread over it.

*c. Mustard.*—The proportions are 1 tablespoonful of mustard to 5 of linseed for an adult ; and 1 tablespoonful of mustard to 8 of linseed for a child. Stir the mustard into a paste with lukewarm water and add it to the boiling water before stirring in the linseed meal. Proceed as in making a linseed poultice.

The poultice should be removed within an hour. Dry the part and ensure that no particles of mustard are adhering to it. Dust with powder and cover with cotton-wool.

*d. Medicated Clay Preparations* (Cataplasma

Kaolin) have superseded to a great extent the use of linseed poultices in inflammatory conditions, and are left in position for 12 to 24 hours.

**When the application of moist heat is discontinued**, a thick layer of warm cotton-wool should be laid over the part that has been treated.

iii. **Medicated Baths.**—The medicaments most frequently used are the following :—

*a. Boracic Acid.*—One tablespoonful to each pint of water. Used as a mild antiseptic.

*b. Carbolic Acid.*—One tablespoonful to each half gallon of water. Used as a local bath for septic conditions and to allay irritation.

In each case place the limb in a small bath hollowed out at one end and containing the medicament and hot water sufficient to cover the limb. Insert a pad under any part of the limb that would otherwise rest on the edge of the bath. To keep the bath hot (100°-110° F.) cover it over and frequently add more hot water, being careful not to scald the patient.

## COUNTER-IRRITANTS

Counter-irritation may be induced as follows :—

1. **Liniments.** These are rubbed into the skin until the part is reddened and warmed. Used mainly for the relief of pain.

2. **Capsicum.** Wool impregnated with capsicum is a common application. It acts as a mild counter-irritant when applied dry. Its effect is increased when sprinkled with cold water and still more so if with spirit.

3. **Iodine.** Dry the skin thoroughly, paint with mild tincture of iodine and allow it to dry. A second or third painting may be necessary to obtain the desired effect. Cover with a dressing applied lightly.

4. **Mustard Leaf.** Dip the leaf in tepid water, lay it upon the skin and cover it lightly.

5. **Mustard Plaster.** Mix mustard and cold water into a paste. Spread upon lint or linen, cover with a layer of gauze or butter muslin. Apply the plaster to the affected part with the muslin next to the skin. Leave in position for five minutes if mere reddening is desired ; for ten minutes or longer if blistering is required. After removal, dress the part with oil or vaseline.

6. **Spanish Fly** (Cantharides).

a. **Plaster.** The plaster is cut to the required size and applied to the skin which should previously be washed and rubbed with spirit. Cotton-wool should be lightly bandaged over it. If strapping must for any reason be used, the pieces should be laid loosely over the lint to allow for the rising of the blister. It takes from six to

twelve hours to raise a blister. The doctor generally directs where the plaster is to be applied—it should never be applied exactly over a joint.

*b. Fluid.* Blistering fluid is painted on with a camel's-hair brush, the space to be blistered being first outlined with vaseline. Lint is put over it when the fluid has dried. If a blister has not formed in half an hour, hasten the process by a fomentation.

*To Dress a Blister.* A blister needs dressing every twelve hours with boracic ointment on lint or boracic wool cut to the size of the blister. When a blister has risen, it is snipped with sterilized scissors and gently pressed, the skin being left on. The fluid should be pressed out on to absorbent wool.

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## CHAPTER XIV

**INFECTION AND DISINFECTION**

INFECTION means the entrance into the human body of germs or microbes capable of producing a disease, which can be transmitted to another person.

The causation of all infectious diseases is a living micro-organism or germ so minute as to be visible only under a powerful microscope. It is capable of such rapid multiplication that in suitable surroundings there can arise from a single germ fifteen to twenty millions of its own kind in twenty-four hours. Although there are over two thousand known kinds of germs or bacteria, there are only about one hundred "wicked" ones, for example, those which produce such diseases as diphtheria, typhoid fever, scarlet fever and tuberculosis.

Germs abound everywhere and, having no power to transport themselves, are conveyed by those who have been in contact with an infected person, by air, dust, water, food, clothing, flies, mosquitoes, rats and other animals.

Germes enter the body—

1. By the air passages. Thorough ventilation and the removal of all dust by a vacuum cleaner or damp duster and the destruction of all infective discharges lessen the danger of infection.

2. By the digestive tract. Scrupulous cleanliness in the administration, handling and preparation of all foods is essential.

3. By the skin. Strict care is necessary in keeping the skin and mucous orifices clean, and all cuts, abrasions or wounds duly protected.

As soon as the germs have gained an entrance into the body they manufacture a poison (toxin) which enters the blood-stream. At the same time the patient's tissues rapidly set to work to counter the attack of the germs by manufacturing a substance (antitoxin) with which to neutralize the poison, while the large white blood corpuscles (phagocytes) endeavour to eat up the germs and thus destroy them. If the individual attacked is in vigorous health, his tissues may win the battle and the germs be destroyed without affecting him unduly. If however, the individual is "out of sorts" or "below par," especially when the external conditions are unfavourable, then the germs become dominant and, flooding the blood-stream with their toxin, produce in the patient their

“special” or particular signs and symptoms—hence the term “specific fever.”

#### MODES OF PROTECTION AGAINST INFECTION

Some people are endowed with such vigorous good health that they go through life without ever suffering from any one of the infectious diseases in spite of repeated exposures to the risk of infection. They enjoy a **natural** immunity. It therefore behoves everyone to take steps to maintain body and mind in health.

In certain diseases inoculation with the appropriate vaccine or serum will increase the resisting power of the body.

To **prevent the entrance of bacteria** is better than fighting them when they have actually entered the body, and to do this effectively known sources of bacterial activity must be avoided as far as possible.

Allow as much sunlight and fresh air as possible to enter the room, as germs generally thrive best in damp, dark places.

Ensure sanitary surroundings to the house by not permitting decaying matter to accumulate, by having all dustbins kept covered and frequently emptied, and by ensuring that excreta in earth-closets are kept properly covered with earth and

periodically cleared away and deeply buried, and by the removal of manure heaps.

Poison flies by using fly-papers, or by distributing formalin in glasses of water (a teaspoonful to the pint) freely about the house, and **prevent contamination** by keeping all milk and other food covered. Squares of muslin, weighted at the corners with beads, are useful for covering the vessels in which milk is kept.

To combat germs certain **disinfectants** are in use. These include :—

*a. Germicides*, such as heat, Carbolic Acid in strong solution (1 in 20), Formalin and, in surgery, Corrosive Sublimate (Perchloride of Mercury) and Iodine. Heat may be used either dry, as in a hot-air chamber such as an oven, or moist as by boiling, or, where practicable, by steam under pressure.

*b. Antiseptics*, such as Carbolic Acid (1 in 100), Lysol, Izal, Jeyes' Fluid, and Sanitas. Other useful but milder antiseptics are such agents as Boracic Acid and Permanganate of Potash.

To make up a solution of a given strength—say carbolic acid (1 in 20), take one part (whether drachm, ounce or pint) and add it to 19 similar parts of water. The same method applies to all solutions of a given strength.

### PRECAUTIONS AGAINST THE SPREAD OF INFECTION

The following rules should be observed whenever a case of infectious disease is being treated at home :—

1. At the outset of the disease soak a sheet in disinfectant and hang it outside the sick-room door, allowing the lower end to remain in a bath containing disinfectant.

2. Immediately pour a strong disinfectant over all excretions, cover the bed-pan with a cloth, remove and empty it at once unless the doctor desires it kept for his inspection. After emptying the bed-pan scald it out and cleanse with a disinfectant.

3. Burn in the fireplace in the sick-room all rags, cotton-waste, tow or cotton-wool used for discharges, also all dust taken up in the sick-room.

4. Place in a pail of disinfectant for one hour at least, all soiled bed and body linen, including handkerchiefs, before boiling them.

5. Keep a basin of disinfectant in the room but out of the patient's reach, in which to wash your hands every time you have done anything for him.

6. When the patient is declared free from infection, give him a bath to which disinfectant

of the appropriate amount has been added, not omitting to wash the head. Put him into a dressing-gown which has not been kept in the sick-room, move him into another room, and dress him.

#### DISINFECTING THE SICK-ROOM

Whenever possible the help of a Sanitary Inspector should be sought. If this is not available :—

1. Open all cupboards and drawers, and hang up dressing-gown and blankets on a clothes-horse or on cords stretched across the room.

2. Paste paper over the fireplace, the framework of the windows, and all other crevices except those about the door.

3. Paste ready for use the strips of paper required for the door and the keyhole.

4. Place a formalin lamp on a metal tray (as a precaution against fire) raised from the floor ; ignite it, and leave the room quickly. To disinfect a large room, several lamps placed about it will be required.

5. Close the door ; cover the crevices about the door and the keyhole with the prepared strips of paper.

6. Keep the room closed for twelve hours.

7. Re-enter the room, open the windows wide, uncover the fireplace, and allow the room to remain in this state for another twelve hours.

8. Send the bedding and mattress to be disinfected.

9. Burn all books, letters, etc., which have been in the room.

After her duties are finished the home nurse must disinfect herself, taking precisely the precautions which she has adopted for her patient.

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## CHAPTER XV

## SPECIFIC INFECTIOUS DISEASES

UNLESS the accommodation at home is sufficient to allow of proper isolation and adequate nursing, a patient suffering from an infectious disease should be removed to an Isolation Hospital in order to prevent the spread of the disease.

## COURSE OF INFECTIOUS DISEASES

Specific infectious diseases pursue a course marked by definite stages. These are—

1. **Infection.** This is the term used to denote the introduction of disease germs into the body in circumstances favourable to their development and multiplication.

2. **Incubation.** This is the period, varying in different diseases and even in different cases of the same disease, during which the germs are developing and multiplying. The period of incubation is generally marked by a train of warning symptoms—listlessness, apathy, poor appetite and a general feeling of indisposition which, though individually they may seem

unimportant, are significant when occurring together and gradually increasing.

3. **Invasion.** This is the period when the germs, having developed, produce distinctive symptoms. Its duration also varies in different diseases and materially helps the doctor in his diagnosis. Typical symptoms during invasion are : (a) Rigors ; (b) Rising temperature ; (c) Headache ; (d) General feebleness ; (e) Thirst ; (f) Dry furred tongue ; (g) Rapid, full pulse ; (h) Quickened respiration ; (i) Sometimes vomiting and diarrhœa.

4. **Eruption** (rash). Next, in eruptive diseases, appears the rash which is characteristic in each disease.

5. **Defervescence.** This is the period during which the fever abates and the temperature goes down to normal either suddenly (crisis) or slowly (lysis).

6. **Convalescence.** This lasts until a normal state of health is regained.

Although home nursing means the care of a case of accident or illness at home under the supervision of a doctor, with whom rests the diagnosis of the case and the plan of treatment, it is desirable to set out briefly the signs and symptoms of certain infectious diseases, the conditions under which they are prevalent and

their general characteristics, so that they may be recognized and proper steps taken.

#### A.—INFECTIOUS DISEASES WITH A RASH

**Measles.**—The Infection, which is air-borne and by direct contact, is present in the discharges from throat and nose, and is greatest during the period before the rash appears.

The Incubation period is from ten to fourteen days.

The Invasion period is from three to five days and is characterized by the symptoms of an ordinary bad cold, the temperature rising to  $102^{\circ}$ .

The Rash appears on the fourth day on the forehead and behind the ears, and then on successive days spreads over the body and limbs. It is dusky-red to pinkish in colour, and, as it fades, becomes brown and yellow.

Defervescence is rapid, the temperature going down gradually.

The patient should be kept isolated for not less than three weeks after the appearance of the rash.

The complications to be guarded against are bronchitis, pneumonia, and inflammation of eyes and ears. Special precautions are necessary

to prevent these complications by keeping the patient in bed in a warm room, and frequently cleansing the eyes with warm boracic solution.

**Scarlet Fever.**—The Infection is conveyed mainly by discharges from the nose, throat or ears, and may be carried by milk, clothes, bedding, books or a third person.

The Incubation period is one to seven days.

The Invasion period is sudden and marked by sore throat, headache, shivering and vomiting.

The Rash consists of small, bright red spots, which appear on the second day on the neck and chest, and spread rapidly until the whole body may assume a scarlet appearance.

The temperature rises rapidly to  $102^{\circ}$ – $103^{\circ}$ , and continues high until it falls gradually as the rash disappears. About the seventh day the skin begins to peel in branny scales about the neck and chest, and extends over the body.

The patient should be kept isolated for six weeks or as long as any discharge from the ears, nose or throat continues.

The commonest complications which must be specially guarded against are discharge from the ears, sore throat, and inflammation of the kidneys.

**German Measles.**—The Infection is usually by direct contact.

The Incubation period is eighteen to twenty-one days.

The Invasion period is short, and the rash, of which the spots are larger than those of scarlet fever but smaller than those of measles, is often the first symptom. There is a slight rise of temperature, accompanied by indisposition, headache, stiffness of neck, with enlargement of the glands.

The Isolation period is ten days from the appearance of the rash.

**Small-pox.**—The Infection is by direct contact—the patient is infective during the whole course of the disease—by third persons, and by clothes, books, insects and by air.

The Incubation period is ten to fourteen days.

The Invasion is sudden and characterized at once by high temperature, headache, pain in back and loins, shivering, and frequently by vomiting and sleeplessness. The temperature continues high until the appearance of the rash on the third day, when it begins to fall. The rash appears first as dull red spots on the brow and wrists. Clear fluid forms in the spots, and they become a pearly colour in three or four days. Then this fluid changes to pus, and the spots increase in size, becoming yellowish in colour and inflamed. During this period the

temperature again rises. About the twelfth day the pustules dry up and form scabs.

The Rash in small-pox is most frequently on the face, wrists and forearms ; it is less frequent in the protected parts of the body. The later stages are marked by intense itching of the skin.

Small-pox patients should always be removed to an Isolation Hospital. They must be isolated until every scab has fallen off.

The chief complications are inflammation of the throat, lungs and eyes, and bedsores are common.

The prevalence and severity of small-pox have been very greatly reduced by vaccination, which, even if it does not prevent the disease, so modifies it that it runs a much milder course and obviates the resultant pitting of the skin. Everybody should be vaccinated in infancy, and re-vaccinated every seven years up to twenty-one. It is of the utmost importance that those who have been in contact with a small-pox patient be re-vaccinated immediately, whatever their age.

**Chicken-pox.**—The Infection is usually direct, but it may be conveyed by air, a third person books, bedding, clothes.

The Incubation period is twelve to twenty-one days.

The Invasion stage is short, without any symptoms.

The Rash appears on the first day. This comes as small rounded spots which speedily fill with fluid, clear at first, then becoming pustular and scabs form. They are most profuse on the body, face and head, but few are seen on the limbs. Itching is often troublesome, and may be relieved by the application of a simple ointment.

The patient should be isolated until all scabs have fallen off.

Complications are very uncommon.

**Enteric Fever (Typhoid)**—The Infection is present in the stools and urine, and is carried by contaminated water, milk, food and flies.

The Incubation period is twenty-one days.

Invasion is very gradual. During the first week the patient suffers from general malaise, shivering, loss of appetite, thirst, headache, and frequently slight abdominal pain. The temperature rises in a characteristic way: it rises two degrees each evening and falls one degree each morning. During the next two weeks it remains at about  $103^{\circ}$ , then falls gradually in the reverse way to its ascent; it falls two degrees each morning and rises one degree each evening, until it becomes normal.

On the seventh or eighth day small rose-coloured spots appear on the abdomen and chest. They come out in crops, each spot lasting two or three days. The patient is very weak, with a pink flush on the cheeks. The tongue, which has been furred, becomes dry and red at its tip and edges: the abdomen is tender. Diarrhœa is usually present, the stools being offensive and of a 'pea-soup' colour and consistence. The urine is scanty and there may be difficulty in passing it.

Defervescence is gradual and begins early in the third week.

The chief complication is ulceration of the bowel, causing severe hæmorrhage from, or even perforation of, the bowels, which results in grave collapse. Pneumonia and bedsores are frequent complications.

The following precautions must be taken :—

**1. Guard against abdominal distension with wind, and hæmorrhage into or perforation of the bowel :—**

**a. By extreme care in diet.** Six tablespoonfuls of milk with two tablespoonfuls of water must be given every two hours, and the patient should drink it within five minutes. Should milk not be digested, as would be evidenced by the appearance of curds in the vomit or stools, whey or albumen water may be substituted. The



patient should be encouraged to drink water freely, as this will help to flush out the bowels and eliminate poison from the system. Nothing else must be given except on the instructions of the doctor, as undigested food or injurious feeding will in all probability cause excessive distension of the bowel with wind, or hæmorrhage into, or perforation of, the bowel, any of which conditions are dangerous and may rapidly prove fatal. A sharp fall in the patient's temperature and collapse would indicate one of these conditions, and **it is the nurse's duty instantly to send for the doctor.**

A distressing feature is a craving for food which must not be gratified. This craving is felt most when the ulcers are healing—precisely the time when the taking of indigestible food is most likely to prove fatal.

**b. By keeping the patient in a recumbent position and absolutely at rest.** This extreme care is necessary from the first, although the patient may not appear to be very ill.

On no account must he be permitted to do anything whatsoever for himself. He must not, however, be allowed to lie always in the same position, partly for fear of bedsores, and partly because, if he continually lies on his back, the blood in the lower part of the lungs will stagnate

and congestion of the lungs will be set up. At least twice a day the patient must be turned with the utmost care from one side to the other, and, if very weak, he must be supported by pillows.

**2. Disinfect all excreta.**—Unless the doctor gives orders to the contrary, place a strong disinfectant in the bed-pan and urinal before they are given to the patient; after use add more disinfectant and cover the bed-pan with a cloth wrung out in disinfectant. In no circumstances leave a used bed-pan in the room.

As the excreta, while fresh, are capable of infecting anyone, they should be kept standing in contact with the disinfectant for two hours; break up any large lumps of fæces to ensure contact with the disinfectant. It is highly important that the disinfectant covers the motion completely, and that the amount used exceeds the quantity of urine passed, otherwise the solution will be so much diluted as to be ineffectual. After emptying the bed-pan, scald and immerse it in disinfecting solution.

When the patient is too ill to be put upon the bed-pan, pads of tow or absorbent wool must be used, and these must be burnt at once when withdrawn.

**3. Allow no fæcal matter to dry either on linen, or on the patient's or nurse's skin,**

as it is capable of conveying infection ; therefore carefully examine all linen, and when it is soiled, however slightly, or wet with urine, bring a suitable receptacle containing plenty of strong disinfectant to the side of the bed, withdraw the linen, and soak it in the disinfectant for a couple of hours ; then roughly wash it and send to the laundry. The draw-sheet should be small, should be removed when soiled and similarly disinfected. As fæcal matter dried on skin is equally dangerous, wash the patient every time after attending to him. Protect your own skin by wearing rubber gloves, which should be boiled after use, and by washing your hands every time you attend to the patient, no matter how often you have to do so.

#### B.—INFECTIOUS DISEASES WITHOUT A RASH

**Diphtheria.**—Infection is usually by contact with and inhaling the breath of the patient, by kissing, or by infected drinking-cups and milk.

The Invasion period is short and marked by soreness of the throat, running of the nose and hoarse breathing, and the glands of the neck are usually enlarged and tender. A false membrane of a greyish colour appears on the tonsils, uvula or soft palate.

The patient must be isolated until he is medically certified as free from infection.

The chief complication is difficulty of breathing, due to swelling of the throat which may result in asphyxia. Other complications are pneumonia, heart failure, vomiting and paralysis.

Diphtheria is a very dangerous disease; but its dangers are minimized by an early injection of anti-diphtheritic serum.

Every doubtful inflammation of the throat should be seen by a doctor.

**Whooping-cough.**—This is a disease marked by bronchitis with a characteristic cough or “whoop.” It is very infectious in its early stages.

The Incubation period is usually fourteen days.

The patient appears to be suffering from bronchitis, and it is not until the tenth day that the “whoop” is heard. At each spasm there is difficult inspiration, and the face becomes congested and bluish. Thick mucus is expectorated and is frequently accompanied by vomiting.

Whooping-cough usually lasts about six weeks, and the patient must be isolated until the whoop has entirely ceased.

The chief complications are pneumonia and convulsions.

**Influenza.**—The Infection is chiefly by the breath and discharges from the nose and throat.

The onset is sudden and is usually marked by rapid increase of temperature, severe headache, pains in the back and limbs, great weakness and the symptoms of a bad cold.

The patient should be isolated until three days after the temperature has become normal.

The chief complication is pneumonia ; therefore rest in bed in a warm room is absolutely essential.

**Mumps.**—The Incubation period varies from twelve to fifteen days.

The Infection is present in the secretions of the mouth and is direct.

The Invasion is marked by headaches, chilliness, stiffness of the neck and slight temperature.

In about ten days swelling and tenderness appear in the gland below the angle of the jaw on one side. There may be pain on moving the jaws or in opening the mouth. The swelling goes down in seven to ten days, but the gland on the other side may become affected later.

The Isolation period is three weeks.

**Erysipelas.**—The infection is conveyed by hands or fomites, and enters the body through a cut or abrasion, often unnoticed, of the skin or mucous membrane.

The Incubation period is three to seven days.

The temperature rises quickly, and rigors, headache or vomiting frequently occur. The patient is often delirious. The skin becomes red, swollen, smooth, shining and painful, and blisters may appear. The inflammation usually subsides and the temperature falls in ten days.

Cuts or abrasions on the skin make the nurse very liable to receive infection. If so affected, she must avoid nursing a case of erysipelas, but if this is impossible she should paint any abrasions of skin with collodion. In any case she must at once wash her hands after attending to the patient, and burn all dressings removed.

The Isolation period lasts until the rash has disappeared and peeling has finished.

**Cerebro-spinal Fever.**—The Infection is in the secretion of the nose. It is usually conveyed by human carriers.

The Incubation period is very short, often only a day.

The Invasion is sudden, with vomiting, headache, rigors, fever, stiffness of the neck, pain in back and limbs, and delirium. Dark spots in the skin may be present. Later the temperature becomes high, delirium and headache are marked, the head is stiffly drawn back: the patient is highly sensitive, resists light or handling, and lies helpless on his side moaning and screaming.

The patient must be isolated until the doctor pronounces him free from infection.

**Tuberculosis.**—Tuberculosis is an infectious disease due to the development in the body of a specific germ, the Tubercle bacillus, of which there are two types : (a) the bovine, which enters the body through the digestive system, mainly in young children, by means of infected milk. This produces tuberculosis of the bowels, kidneys, bladder, brain, bones, and glands. (b) the human, which is found in the air and enters the body by the respiratory system and produces tuberculosis of the throat and lungs (phthisis).

Tuberculosis differs from other infectious diseases in that its onset is slow and insidious. It is not hereditary, but in the children of tubercular parents there is an inherent weakness which provides a soil favourable for the active development of the germs. The risk of infection and the danger of development are greatly increased by lowered vitality of the individual, by insanitary conditions, by living in overcrowded or insufficiently ventilated houses, or in low-lying, damp and sunless localities. These conditions all lessen the powers of resistance to the disease. Tuberculosis of the lungs may follow such diseases as pneumonia, pleurisy, whooping-cough, and measles.

It is most desirable that tubercular patients should go to a tuberculosis sanatorium for some months. These institutions are always situated in districts where the climate is most suitable. Even if the patient's own home affords all the necessary environment and facilities, the treatment at a sanatorium, in addition to the advantages of close medical observation and supervision, will educate him to take his own temperature, to disinfect his sputum, to choose his appropriate diet, to regulate his manner of life to his ultimate advantage, and to prevent the spread of the disease to others.

#### NURSING OF THE CONSUMPTIVE AT HOME

1. Provide abundance of pure air. This is best secured by living and sleeping in the open air, as in shelters in the garden or on the verandahs of houses.

2. Provide a separate room, which must be dry and sunny : if possible, this should be on the ground floor, so that the patient can easily walk or be carried into the open air. Carpets should not be used : the floor should be polished or covered with linoleum and washed each day with soap and water. The windows should be kept wide open both by day and night, and



curtains must not be used. Draughts can easily be prevented by screens suitably arranged. Nothing which will harbour dust must be allowed in the room, and the damp duster used for dusting must be boiled after use.

3. The patient must wear warm woollen under-clothing and night garments. This is particularly necessary in the later stages of the disease when sweating is a common symptom.

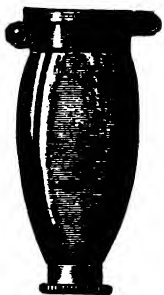


Fig. 61.—SPUTUM FLASK.

4. Destroy sputum. The patient must use a proper sputum-flask (*Fig. 61*), which must be frequently emptied and rinsed with disinfectant solution, and the sputum burned. After expectoration, wipe the patient's mouth with rag or soft paper which must be burnt at once. Handkerchiefs must not be used.

5. Give a plentiful diet of wholesome, easily-digested food, daintily served. Leave no food or crumbs lying about, and burn anything remaining after a meal. Wash the patient's plate, knife, fork and spoon in boiling water and soda.

6. Encourage the patient to lead an out-of-door

life. If the temperature rises to  $100^{\circ}$  he must be kept absolutely in bed, but if the temperature is about normal, he should go out as much as possible. The doctor will give instructions as to the amount of exercise he may take, but he must not be allowed to become tired, as rest is a most important factor in the treatment.

7. Inhaling the patient's breath and kissing must be avoided as this disease is most infectious.

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## CHAPTER XVI

**SURGICAL NURSING—WOUNDS**

A **WOUND** is a break in the continuity of the tissues of the body which permits the entrance of disease-producing germs, and may be caused either intentionally as in an operation, or unintentionally as by accident.

Wounds heal by primary union (first intention) or by granulation (second intention).

*a.* Healing by first intention occurs when a wound is free from germs (aseptic), when the edges are cleanly cut, unbruised and brought into close apposition. This is the desired method of union.

*b.* Healing by second intention occurs when the edges of the wound cannot be approximated, when the wound is damaged or bruised or when the wound is infected (septic) by germs.

Asepsis is a sterile condition, free from infection.

Sepsis is a condition due to infection with disease-producing germs.

Antisepsis is the destruction of these germs by the use of antiseptics, such as heat and chemical agents.

As a wound cannot heal by first intention when it is septic, endeavour to keep it free from infection. To promote this healing, all bleeding must be arrested, the wound and surrounding skin must be sterilized, its edges brought accurately together, and an aseptic or antiseptic dressing applied.

The nursing of these cases does not differ in detail from the general principles already enunciated, but it must be carried out under conditions absolutely free from disease-producing germs.

Asepsis is secured by preventing anything which has not been sterilized from coming near or touching the wound. This applies to the surgeon's hands, the nurse's hands, the patient's skin, the instruments, dressings, ligatures, towels, water, vessels holding the water, bowls, operating table, overalls and gloves.

Should, however, sepsis already be present antiseptic agents in solution must be used, but these will, if used in too strong a solution, injure the leucocytes, skin, or tissues and poison the general system.

#### ANTISEPTICS

The antiseptics in general use for surgical nursing include :—

- i. **Iodine**.—Mild Tincture of Iodine is much

used in the preparation of a patient's skin before operation, and in the treatment of wounds. As the spirit readily evaporates, it is necessary to keep the tincture in glass-stoppered bottles; otherwise, owing to evaporation, the proportion of spirit becomes less, leaving too large a proportion of Iodine.

ii. **Alcohol**, which may be in the form of Methylated Spirit, is used for the same purpose as Iodine.

iii. **Carbolic Acid**, 1 in 100 solution, which is often used as an antiseptic in the instrument tray and for sterilized swabs and towels.

iv. **Perchloride of Mercury** (corrosive sublimate). It is used as a germicide 1 in 1000, and as an antiseptic in weaker solutions. It is a dangerous poison and is therefore coloured blue. It should not be used for disinfecting metal instruments as the Perchloride of Mercury forms a black deposit on them, and blunts the edges of knives.

v. **Binioidide of Mercury**.—It is used in the strength of 1 in 500 for hands and patient's skin, 1 in 1000 for ligatures. It is preferable to Perchloride of Mercury, as it does not irritate the skin nor damage the instruments.

vi. **Preparations of Tar** such as Lysol, Izal, Creolin, Cyllin.



## TO MAKE THE HANDS ASEPTIC

1. Wash the hands and forearms up to the elbows with soap (ether soap if available) and hot water : running water is preferable, but if it is not available the water must be changed several times ; pay special attention to the skin between the fingers and to the nails for which a sterilized nail-brush should be used.

2. Rub the hands and forearms well with gauze soaked in methylated spirit, and afterwards rinse them either in sterile water or a weak antiseptic lotion.

If only one nurse is available, she should so arrange her duties that it will not be necessary for her to touch anything unsterilized after she has made her hands aseptic. If she does touch anything septic, she must disinfect her hands and forearms again before touching anything aseptic.

These rules must be followed even if rubber gloves are to be worn. (*See* page 212).

## OPERATIONS

When an operation is performed at home the nurse's duties include not only those during the operation but also the nursing preparations before and the treatment after. She must therefore understand the technique required so that she

may be a competent assistant to the surgeon, a help to the trained nurse, or, if necessary, able to take charge of all the nursing details necessitated by the operation.

The necessary details will include :—

1. Preparing the room.
2. Preparing the patient.
3. Preparing the dressings, instruments, etc.
4. Assisting at the operation.
5. After-care of the patient.
6. Dressing a wound.

#### PREPARATION OF ROOM

**All unnecessary furniture must be removed.** If an *immediate* operation is to be performed the room must be disturbed as little as possible so that the dust is not stirred up. The carpet should be covered with a clean dust sheet carefully pinned down. If the operation is *not immediate* the carpet should be removed and the floor scrubbed ; if linoleum covers the floor, it should be washed. The room should be thoroughly cleansed with a vacuum cleaner or damp duster.

If it is possible, the patient should occupy another room and only come to the operation room when the surgeons are ready. If only one

room is available, the bed should be placed on one side and screens placed round it so that the patient cannot see the preparations.

Take all necessary precautions against the room being **overlooked** during the operation by stretching short muslin curtains across the lower half of the window, or by having the glass whitened. Moist soap will make a good film for this purpose.

Ensure sufficient **light**. It is well to provide against failure of electric light by having two well-trimmed lamps in readiness.

The **bed** to which the patient is to be moved after the operation should be prepared. Brush the mattress well and wash the bedstead with carbolic solution. Make the bed in the usual way with a draw-sheet and mackintosh. Having put on the upper bedclothes, do not tuck them in but fold the edges neatly back over the counterpane so that they may be easily moved for the reception of the patient.

On the morning of the operation a fire should, if necessary, be lighted so that the **temperature of the room** will be  $70^{\circ}$ - $75^{\circ}$  F. Place two hot-water bottles in the bed and put a blanket in front of the fire to warm. Whilst the patient is being brought to the bed after the operation lift the upper bedclothes on to a chair and

remove the bottles. When the patient has been laid on the bed, cover him with the warm blanket, place a cradle over the seat of the operation if necessary and replace the hot-water bottles and the bedclothes and tuck them in.

For the operation there must be provided :—

1. A long narrow table. If a regular operating table is not available the kitchen table or two small ones of equal height lashed together by the legs will answer the purpose. Avoid using low tables, as stooping would seriously impede the surgeon. Scour thoroughly not only the top but also the legs and under the top with soft soap and water and sand, and then wash the whole table with a strong disinfectant. When the table is dry place on it one or two blankets folded lengthwise to serve as a mattress, cover them with a long mackintosh sheet and over all lay a sterilized sheet.

Provide a small pillow for the head, and lay over it a piece of sterilized jaconet and towel. If, however, the operation is on the head, wrap the entire pillow in jaconet and lay a sterilized towel over it.

As a rule, place the operating table in the middle of the room with the foot towards the window.

2. Four smaller tables. Scour and disinfect

the four tables in the same way as the operating table, and cover each with a sterilized towel or cloth. One is used for the surgeon's instruments. The second is for the anæsthetist, and on it should be placed a soft face towel, vaseline, and a small bowl or the bottom of a soap dish in case the patient should vomit. It will also hold the instruments and appliances the anæsthetist will bring with him. The third table is required for the basins with the swabs and lotions, and the fourth for the dressings.

3. Two or three pails in which to place soiled dressings, swabs, and lotions.

4. Jugs with hot and cold sterile water and a large kettle of boiling water.

5. A washstand with two basins, soap, towels, and nailbrushes which have been sterilized and placed in a bowl containing a weak antiseptic lotion.

6. Twelve sterilized towels ; sterilized swabs, which it is convenient to have tied in bundles of ten or twelve, so that they can be easily checked and counted after the operation ; dressings, bandages ; safety pins.

7. Common salt. One ounce should be provided so that saline solution can be quickly prepared if required.

All bowls, trays, and jugs to be used at the

operation should be washed with soap and water and sterilized either by boiling or placing in 1-20 carbolic lotion until just before the operation.

#### PREPARATION OF THE PATIENT

*On the day before the operation* the nurse should ask the surgeon how he wishes the patient to be prepared. If no specific instructions are given the patient should if possible be kept quiet the previous day : he should take only light food, have a warm bath and an aperient in the evening. *On the day of the operation* he may, if the operation is not to be performed too early, and with the surgeon's permission, have a light breakfast of tea, with toast and butter, and, three hours before the operation, a cup of tea or bovril.

His preparation begins with a simple enema first thing in the morning. Then he may have a warm bath or be well sponged down. The area of the operation must now be sterilized by shaving and then cleansing thoroughly with ether soap or spirit soap, which must be washed off with hot water ; the skin must again be washed with hot biniodide of mercury solution, and covered with a compress of lint or gauze wrung out of the same solution : or, after drying, the skin may be painted over with mild tincture

of iodine, allowed to dry and covered with a dry sterile towel.

Before the operation artificial teeth, hair-pins, jewellery, etc., must be removed, and if the hair is long in a woman it should be plaited in two plaits tied at the ends. The patient must put on warm flannel clothes which can be removed easily, and long woollen stockings.

#### PREPARATION OF THE DRESSINGS AND INSTRUMENTS

If the surgeon requires the nurse to sterilize his instruments, swabs, dressings, etc., she must do so in accordance with his instructions. If none are given, she must proceed as follows :—

1. Swabs, lint, gauze, towels, etc., must be boiled for half an hour, wrung out and placed in bowls containing either perchloride of mercury (1 in 1000), biniodide of mercury (1 in 500), or carbolic acid (1 in 20). Before use immerse them in solution of such strength as the surgeon may desire.

2. Instruments must be boiled for twenty minutes in water containing washing soda (one dessertspoonful to one pint). The water must entirely cover them or they will rust.

3. Knives, needles, scissors and sharp-edged

instruments must not be boiled. They are placed in pure carbolic acid for one minute, removed with sterilized forceps, washed in hot sterilized water and placed in sterilized water, spirit or lotion as desired by the surgeon.

4. Rubber gloves must be filled with water to make sure there are no holes in them. To sterilize them, they must be washed in hot soapy water, rinsed in clean water, wrapped in lint and boiled for five minutes. They are then placed in warm antiseptic lotion until required.

5. All trays containing instruments and dressings must be covered with a sterilized towel until required.

*To cleanse instruments after an operation,* wash and scrub them with a nailbrush in cold soapy water ; then wash in clean water and boil them for twenty minutes : then dry them thoroughly, particularly at the joints and serrated ends, with a clean fine cloth, and polish them with washleather. Rubber gloves must be cleaned in a similar manner, dried and powdered with French chalk.

#### ASSISTANCE AT THE OPERATION

It is desirable to have two nurses present at an operation, both of whom should have made their hands aseptic. One will prepare lotions,



empty basins, assist in moving the patient and do anything necessary ; while the other will assist as directed by the surgeon but must not touch anything that has not been sterilized.

1. Each must wear a sterile overall, cap, mask, and rubber gloves.

2. If either touches anything not sterile she must wash her gloved hands in soap and water and dip them into a 1 in 500 biniodide of mercury solution, a bowl of which should be at hand.

3. Sterile towels must be placed all round the part to be operated on and over the patient.

4. All dressings and swabs, clean or soiled, must be handled with sterile forceps and not with fingers.

5. The instruments and swabs must be handed to the surgeon as he requires them.

6. *After the operation* the used and unused swabs must be collected for counting, as the gravest consequences would ensue if a swab were left in the wound.

#### AFTER-CARE OF THE PATIENT

The nurse must not leave the patient until he has so far recovered from the anæsthetic as to be able to speak to her, after which he may be allowed to sleep. Before leaving him, she must

be sure that he is a good colour, is breathing naturally, has a good pulse, and that no blood is oozing through the dressings. As he may vomit, his head should be turned to one side, a towel should be arranged round his neck and a small bowl placed within his reach.

Obtain from the doctor instructions as to diet, washing, and aperients.

**Complications** which may occur and against which the nurse must be on her guard are :—

i. Obstruction of breathing, which may be caused (*a*) by the tongue falling back, in which case the patient's head must be turned to one side and the jaw drawn forward by placing the fingers just behind the angle of the jaw on each side, or (*b*) by vomited matter getting into the air-passages, when the mouth must be forced open, a pencil or cork placed between the teeth and the throat cleared with the finger.

ii. Collapse, which is indicated by rapid, weak pulse, quick, sighing or irregular breathing, increasing pallor and coldness.

The foot of the bed must be raised, the pillow removed, the patient covered with hot blankets and kept warm, and the face sprinkled with hot and cold water alternately. If breathing appears to be failing, artificial respiration must be applied.

iii. Hæmorrhage, when the part must be

elevated and a firm bandage tightly applied over the dressings. On no account give stimulants without the surgeon's instructions, as anything which increases the heart's action increases the hæmorrhage. Keep the patient quiet and, should he learn of the hæmorrhage, tactfully allay any excitement aroused.

**If any of these complications should occur, the surgeon must immediately be notified.**

If necessary the following must be provided :—

a. Sand-bags, or pillow covered with jaconet, to steady or support a limb that has been operated on.

b. A jaconet pillow-case, to place under the ordinary pillow-case, if the operation has been on the head.

c. A hard pillow to place beneath the knees in abdominal cases.

#### DRESSING A WOUND

To assist the doctor in dressing a wound :—

1. Make your hands aseptic.

2. Prepare the necessary appliances as follows : sterilize a pair of scissors, two pairs of forceps (one dissecting forceps) and a probe, and place them in an antiseptic lotion. Put the necessary number of swabs in a bowl of antiseptic lotion,

or if preferred by the doctor, in hot sterile water. Have at hand a jug of hot sterile water, sterile towels and the box of sterile dressings. Cover all with a sterilized towel.

3. Turn down the bedclothes and cover them with a mackintosh. Remove the bandages and outer wool from the wound and put them at once in the receptacle provided for them.

4. Wash your hands and dip them in the bowl of antiseptic solution. Place the sterile towels round the wound and have the necessary instruments and dressings in readiness for the doctor.

*When the dressing is finished*, on no account omit to wash your hands and dip them in the antiseptic solution.

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## CHAPTER XVII

## SICK CHILDREN

ALTHOUGH the details of general nursing apply to a great extent to children, there are differences between children and adults which the nurse must realize. The first essential to success is to win the child's confidence, and this frequently requires infinite patience, tact and sympathy.

Three great physiological differences between children and adults can be recognized :—

- i. Children are growing. This throws great strain on the digestive and blood-forming organs, so that disorders of digestion and absorption are common. Regular and frequent meals of easily-assimilable food are necessary. Whilst insufficient or improper feeding will produce wasting, over-feeding will give rise to flatulence through the inability of digestive organs to digest the excess of food. The bony and muscular systems are developing, and diseases due to children outgrowing their strength or to malnutrition are frequent. Nervous disturbances are common. In infancy the mental faculties are undeveloped and the child's movements are mostly involuntary

and reflex. As these are less under control, disorderly movements in the form of convulsions are apt to occur on the slightest provocation. Therefore the child must have adequate rest and sleep, and everything possible must be done to avoid dissipating the child's energy.

ii. The vitality of children is greater. They can often recover from injurious influences which would be fatal to older persons, and in them diseases run an extremely rapid course.

iii. The organs of children are in a different condition from those of adults, and require more care. The respirations in an infant are 35 to 40 a minute : at twelve years of age they are 24. Children therefore need the air purer and warmer. The pulse-rate in an infant is 130 : at the twelfth year 80 : in addition there is less blood in the body ; and, owing to the relatively larger surface of the skin, the bodily heat is more difficult to retain. Children are thus more susceptible to cold, and must wear warm woollen clothing.

#### COMMON SYMPTOMS

As young children cannot describe their symptoms, careful and intelligent observation must be made.

##### (a) **Crying.**

i. The cry of hunger is usually accompanied



by placing the clenching hands in the mouth and bending the limbs.

2. Intestinal troubles are evinced by prolonged crying, at times greatly intensified, by restless movements of the body and drawing up the knees.

3. Earache should be suspected when, in addition to constantly crying the child presses its cheek against its mother's breast.

4. Hoarse feeble crying probably denotes inflammation of the air-passages.

5. Tearless crying is frequently due to bodily pain, while a flow of tears more frequently arises from mental causes.

6. Absence of crying may be a sign of exhaustion or of serious disease.

(b) The **posture** in bed requires careful attention.

1. A healthy child usually lies partly on the side with his cheek on the pillow.

2. In exhaustion or serious diseases the posture is generally on the back with the face upwards and the eyes closed.

3. Lying on the side with the head partly drawn or thrown back, is suggestive of brain affection, or, if associated with difficult breathing, of trouble in the air-passages.

4. The prone position (back upwards), with

the face pressed into the pillows, or lying supine (on the back) with the legs flexed on the abdomen, may indicate abdominal trouble.

(c) Note any alteration from the clear and fresh **complexion** of a healthy infant.

#### COMMON AILMENTS

Many infantile diseases develop so quickly that some knowledge of what to do until professional help arrives should be possessed by all who have to nurse children.

**Teething.**—During the period of teething, an infant is liable to be feverish with symptoms of minor ailments. If the gums are swollen and painful, they may be gently rubbed with the moistened finger. Avoid exposure to cold or errors in feeding.

**“Running Ears.”**—Any discharge from the ear may be a matter of serious import as it is a visible sign of probable disease of the bone and may, if neglected, result in permanent deafness. In every case medical advice should be obtained. If the doctor orders the ear to be syringed, this must be done **with the utmost care and gentleness, no force whatever being used.**

**Convulsions** are usually sudden in onset and are the result of anything which disorders nervous

action, e.g., teething, indigestion, and worms. The best immediate treatment is :—

1. Support the child for fifteen to twenty minutes if necessary in a warm bath slightly above the temperature of the body so that the water reaches to the armpits.

2. Keep a sponge frequently dipped in cold water on the top of the head so long as the child is in the bath.

3. On removal from the bath, wrap the child in a warm blanket and still keep the head cool.

**Croup** is the term given to sudden and difficult breathing due to obstruction of the windpipe. As this may be caused by a catarrhal inflammation of the larynx, by choking, or by diphtheritic secretion, it is a serious condition and a doctor must at once be summoned. Till he arrives, apply hot fomentations continuously to the throat and moisten the air with steam. If breathing is seen to be failing, at once apply artificial respiration.

**Digestive Disorders.**—These are usually due to errors in diet and improper feeding. The commonest of these ailments are :—

- (a) *Costiveness.*—A single dose of castor oil, magnesia, liquorice powder or syrup of figs may be given, but strong purgatives are not permissible except on medical advice.

- (b) *Diarrhœa.*—Give one small dose of castor

oil, but never allow the diarrhœa to continue or become excessive without at once summoning medical advice.

As the correct feeding of children is important in health, it is of even greater importance in times of illness. The home nurse must therefore be careful to obtain from the doctor definite instructions on the subject.

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## CHAPTER XVIII

## CONVALESCENCE

THE nurse will frequently find it difficult to manage her patients during convalescence as, although on the one hand it is not advisable to allow them to do entirely as they like, yet, on the other hand, they should not be thwarted in their wishes more than can be avoided, as this would irritate, and so delay their recovery. Some patients require to be encouraged to make an effort ; others must be restrained from doing too much. In fact the nurse must use all her tact and, while being firm and patient, she should, if possible, contrive to achieve her object although at the same time the patient thinks that he is having his own way.

Special precautions must be taken to protect from undue strain the organs which have been affected, and to guard against any complications which are likely to arise.

It is important that the patient has sufficient rest and sleep, that his clothing is warm, and his food easily digestible, and that the

intervals between meals are regular and not too long.

He should avoid hot and badly ventilated rooms, but should take as much exercise in the open air as is allowed by the doctor.

If practicable, he should go away for change of air and environment ; if not, vary his surroundings as much as possible.

Whilst cheerful visitors should be encouraged, see that they do not interfere with his rest or meals, or stay so long as to weary him.

Convalescent patients usually think they are stronger than they really are, and are apt to overtax their strength. This must be avoided at all costs, as upon the proper conduct of this period will depend the subsequent health of the patient.

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## APPENDIX I

### MILK REGULATIONS

ALL milk produced is divided into "designated" and "undesignated" milk. Undesignated milk may be sold loose, in bottles or in any other way; designated milks for sale to the general public must be bottled and sealed on premises approved by the local Health Authority; bottling of these milks on any other premises is illegal.

Designated milks have definite standards of cleanliness to which the producer must conform, and are known as Certified Milk, Grade A Tuberculin Tested (T.T.), Grade A, and Pasteurized.

"Certified Milk" is milk from tubercle-free cows. It must be bottled on the farm where it is produced and the farmer must hold a special licence from the Ministry of Health. There is a very stringent standard of cleanliness. It must be labelled "Certified Milk" and bear the producer's name and address and the day of milking. It is the purest and cleanest milk that can be produced.

' Grade A ' (T.T.) is milk having the standard of cleanliness of Grade A Milk, but it is produced from herds that have been tested with Tuberculin. It is free from the tubercle bacillus.

" Grade A " is milk produced on approved farms from cattle subjected to veterinary inspection every three months. This milk is produced under licence from the local authority, but there is no guarantee against the presence of tubercle bacilli.

These three kinds of designated milk are untreated and are " straight from the cow."

" Pasteurized Milk " is milk subjected to treatment by heat in order to kill any micro-organisms that may be present. The milk must be kept at a temperature between  $145^{\circ}$  F. and  $150^{\circ}$  F. for 30 minutes and then rapidly cooled. The effect is to kill nearly all bacteria, but not the spores from which they grow. No change in the appearance of the milk can be detected, nor is the taste altered ; but if the temperature rises to  $161^{\circ}$  the lact-albumen will be coagulated.

## APPENDIX II

LAST OFFICES OR CARE OF THE  
DEAD

WHEN the death of a patient occurs, and the duty of "laying out" the body falls to the lot of the home nurse, she should adopt the following procedure :—

Ensure that the patient's eyelids are closed. Allow relatives and friends to remain alone in the room for a short time. On returning, ascertain the wishes of the relatives regarding the removal of false teeth and jewellery, and request all to leave the room. Remove any nursing requisites that may be in the bed such as hot-water bottles or air-cushions, and all the upper bedclothes with the exception of a sheet. Take off the nightdress or pyjamas, and ensure that the bladder is empty by making firm downward pressure on the abdomen just above the pubes. Apply a jaw-bandage, place a small pillow under the head, straighten the limbs, and cover the body completely with the upper sheet. Tidy the room, and leave the body for an hour.

Have ready at the end of the hour plenty of hot water, a hand-basin, flannel, soap, some disinfectant (Lysol) and towels. The "laying-out" of the body can be done alone, but more easily with help.

Remove the upper sheet and thoroughly wash the body all over with soap and warm water to which a little of the disinfectant should have been added. Dry and dress the body in the garments supplied, taking care to remove any wet undersheet. See that the nails are short and clean and the hair combed and brushed. A woman's hair, if long enough, is done in two plaits and tied with white ribbon. A large pad of cotton-wool should be bandaged in position to catch any discharge from bladder or rectum. In surgical cases, apply a clean dressing and bandage; a clean undersheet and pillow-case are placed in position. The arms may be brought down to the sides or folded across the chest. A clean sheet is placed over the body up to the chin and the face is covered with a clean handkerchief. The room should be left perfectly tidy and the window slightly open.

## GLOSSARY

## Abbreviations often used on prescriptions :—.

ABBREVIATION.	IN FULL.	MEANING IN ENGLISH.
āā .. ..	Ana .. ..	Equal parts of each
a.c. . .	Ante cibum ..	Before food.
aq. bull. . .	Aqua bulliens ..	Boiling water.
aq. dest. . .	Aqua destillata	Distilled water.
b.i.d. or bis in d	Bis in die ..	Twice a day.
c.m. . .	Cras mane ..	To-morrow morning
c.n. . .	Cras nocte ..	To-morrow night.
h.m. . .	Hac mane ..	This morning.
h.n. . .	Hac nocte ..	This night.
h.s. . .	Horâ somni ..	At bed-time.
o.m. . .	Omni mane ..	Every morning.
omn. bih. . .	Omni bihorâ ..	Every two hours.
omn. hor. . .	Omni horâ ..	Every hour.
o.n. . .	Omni nocte ..	Every night.
p.c. . .	Post cibum ..	After food.
p.r.n. . .	Pro re nata ..	When required.
s.o.s. . .	Si opus sit ..	If necessary.
st. or statim	Statim ..	Immediately.
sum. . .	Sumendum ..	To be taken.
(also written s., as in t.d.s.—To be taken three times a day.)		
t.d. . .	Ter die ..	Three times a day.
3tis horis	.. ..	Every three hours.
4tis horis	.. ..	Every four hours.

**Abdomen.**—The lower cavity of the trunk.

**Abnormal.**—Different from the usual condition.

**Abscess.**—A localized collection of *pus*.

**Acid.**—A sour-tasting substance which, in combination with an *alkali* (which it neutralizes) or metallic body, forms a *salt*.

**Acute.**—Sharp. An acute disease is one that runs a short but serious course—the opposite to *chronic*.

**Alimentary.**—Pertaining to food.

**Alkali.**—A soapy or acrid tasting substance which, combining with an *acid*, neutralizes it and forms a *salt*. An Alkali combining with a fat *saponifies* it.

**Anæmia.**—A condition caused by a deficiency of blood or of its red *corpuscles*, and characterized by pallor, loss of energy, etc.

**Anæsthetic.**—A drug which produces loss of the sense of feeling, either local or general. It is usually inhaled, injected, or applied externally to a part.

**Anæsthetist.**—The doctor who administers the anaesthetic at an operation.

**Anatomy.**—The science dealing with the structure of the body, its organs and parts.

**Anterior.**—Situated in front.

**Antiseptic.**—Destructive of germs, and thereby preventing putrifaction and decay.

**Anus.**—The orifice of the *rectum*.

**Aorta.**—The great central artery of the systemic circulation. It arises at the left ventricle of the *heart*, gives off branches to all parts of the body, and terminates on a level with the *cartilage* between the fourth and fifth lumbar *vertebræ* by dividing into the two iliac arteries.

**Apertient.**—A drug or medicine that causes a movement of the bowels. Its action is milder than that of a *purgative*.

**Apoplexy.**—Insensibility caused by *effusion* of blood into the brain.

**Appendicitis.**—Inflammation of the *Appendix*.

**Appendix, vermiform.**—A worm-like pouch of the *cæcum*, from three to six inches long. It is situated near the right groin.

**Artery.**—Any one of the vessels that carry blood from the *heart* to the capillaries.

**Articulation.**—See Joint.

**Asepsis.**—Surgical cleanliness.

**Aseptic.**—Free from poisonous germs. Surgically clean. Sterile.

**Aspect.**—(1) Position with regard to the points of the compass. Example: A room facing south has a southerly aspect. (2) Part of a surface that may be seen from any particular direction. Example: The anterior aspect of the arm is that part which may be seen from the front.

**Asphyxia.**—Suspended animation due to interference with respiration. Suffocation.

**Aural.**—Pertaining to the ear.

**Bacillus.**—See Bacterium.

**Bactericide.**—That which destroys bacteria. A true disinfectant.

**Bacterium (pl. Bacteria),** also known as a *germ* or *microbe*.—Any vegetable micro-organism, consisting of a single *cell*. Most of them are quite harmless, but some may cause disease when they enter the body. They are classified according to their shape as follows:—

Bacillus (pl. Bacilli).—Rod-shaped.

Coccus (pl. Cocci) or Micrococcus.—Ball-shaped.

Diplococci.—Cocci joined in pairs.

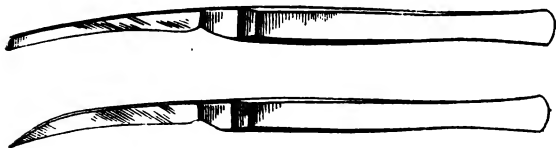
Staphylococci.—Cocci joined in clusters.

Streptococci.—Cocci joined in wreaths.

Spirillum (pl. Spirilla).—Spiral-shaped.

**Bile.**—A digestive alkaline fluid secreted by the *liver* and stored in the *gall-bladder*, whence it passes through the bile-duct into the small intestine.

**Bistoury.**—A narrow surgical knife having a straight or concave cutting edge, and either a sharp or blunt point.



**Bladder.**—The reservoir for urine. It is situated at the front of the pelvic cavity.

**Bone.**—The material of the *skeleton*. It consists of an outer layer of dense structure, called the Compact Tissue, and an inner layer consisting of slender inter-laced fibres, called the Cancellous or Spongy Tissue, which contains large marrow cavities. Its composition is partly animal matter containing gelatine, and partly earthy matter, chiefly phosphate of lime.

**Bougie.**—A slender solid rod for introduction into *urethra*, *rectum*, or other orifice, to remove obstructions.

**Bowels.**—See Intestines.

**Brain.**—An organ situated within the cranium. It is composed of nervous matter and comprises four parts—the cerebrum, cerebellum, pons varolii and medulla oblongata.

The cerebrum is the largest part, and is divided into the right and left hemispheres. It occupies the upper portion of the *cranium*, contains the centres of



sensation and voluntary motion, and is the seat of the intellect, will, and emotions.

The cerebellum is situated below the back portion of the cerebrum, and is concerned in regulating muscular movements.

The pons varolii is a broad, arched band which serves to connect the cerebrum, the cerebellum, and the medulla oblongata.

The medulla oblongata is the connecting link between the brain and the spinal cord. It contains the vital centres of circulation, respiration, and swallowing.

**Bronchial.**—Pertaining to the bronchi and their branches.

**Bronchial Tubes.**—Branches of the *bronchi*.

**Bronchitis.**—Inflammation of the *bronchi* and *bronchial tubes*.

**Bronchus (pl. Bronchi).**—Either one of the two main branches of the windpipe.

**Buttock.**—The rump, or either half of it.

**Cæcum.**—The first part of the large intestine, situated in the lower part of the abdomen on the right side.

**Calorie.**—See Heat.

**Capillary.**—Any one of the vessels that connect the arteries and the veins. Their size is so small that they are invisible except under a microscope. Through their delicate walls the interchange of gases, fluids, and waste products takes place.

**Capsicum.**—A counter-irritant.

**Carbohydrate.**—Any compound of *carbon* with *hydrogen* and *oxygen* in proportion to form water. Sugars and starches are carbohydrates.

**Carbon.**—An inflammable solid, very widely distributed in combination with other substances, for

example, coal, black lead (graphite or plumbago), etc. In combination with hydrogen it enters into the formation of all organic (animal and vegetable) substances.

**Carbon Dioxide**, also known as carbonic acid gas.—A gas, half as heavy again as air, which consists of one part of carbon with two of oxygen. It is formed by combustion, and the decay of vegetable matter. It is given out during respiration.

**Carbon Monoxide**.—A gas containing one atom of oxygen less than carbon dioxide. It is lighter than air, very poisonous, and is found in the exhaust fumes from motors.

**Cardiac**.—Pertaining to the heart.

**Carpus**.—The wrist as a whole or the eight carpal bones in it.

**Cartilage**.—Smooth elastic *tissue*, softer than bone, also known as gristle. It supplies the smooth caps to the ends of bones at the joints. Another of its uses is to stiffen the walls of certain organs and channels and projecting parts, such as the ear and *epiglottis*.

**Casein**.—The principal *protein* found in milk. The basis of cheese.

**Catarrh**.—Inflammation of a *mucous membrane*, with discharge of *mucus*.

**Catheter**.—A slender tube for evacuating *urine* from the bladder. The end to be inserted into the *urethra* is more or less curved, with the tip closed to form a blunt



FEMALE CATHETER.

point. Near the tip are holes to permit the passage of urine. When not in use a metal wire is kept in the



MALE CATHETER.

tube. Material: Metal, gum elastic, indiarubber (Jagues), etc. Sizes: smallest, 1; largest, 12.

**Cell.**—Any one of the microscopic living units of which *tissues* are built up.

**Cervical.**—Pertaining to the neck.

**Chemical Compound.**—The combination by chemical means whereby two or more substances form a single and different substance.

**Chemistry.**—The science dealing with changes in the composition of matter and with the properties of matter due to its composition.

**Chronic.**—Continuing in a non-acute state for a lengthened period.

**Chyle.**—The digested fatty matter absorbed by *lacteals* from the small intestine. It mixes with *lymph* and is carried up the *thoracic duct*, whence it is discharged into veins at the left side of the root of the neck.

**Chyme.**—Partially digested food as it is passed from the stomach into the intestine in a semi-liquid state before absorption.

**Cicatrix.**—A scar.

**Clavicle.**—Collar-bone.

**Clinical.**—Pertaining to the bed-side.

**Coccyx.**—The lowest part of the vertebral column, formed of four united *vertebræ*. The tail-bone.

**Colitis.**—Inflammation of the *colon*.

**Colic.**—Acute griping pains in the stomach or bowels.

**Colon.**—The part of the large intestine that extends from the *cæcum* to the *rectum*. It is divided into three parts. (1) The Ascending Colon extends upwards on the right side of the abdomen from the *cæcum* to the transverse colon. (2) The Transverse Colon extends across the abdomen immediately below the liver and stomach. (3) The Descending Colon extends downwards on the left side of the abdomen from the transverse colon to the rectum.

**Coma.**—Profound insensibility, cp. Stupor.

**Consipation.**—Retention of the *fæces*.

**Contagion.**—Spread or communication of disease by contact or touch with a person.

**Contagious.**—Communicated by contact or touch.

**Convalescence.**—The stage of an illness during which recovery takes place.

**Convulsion.**—An involuntary contraction of a voluntary muscle. Convulsions may be (1) Clonic, in which the muscles are contracted and relaxed alternately and (2) Tonic, in which they are persistently contracted.

**Cornea.**—A transparent structure in front of the pupil and iris of the eye.

**Corpuscles, Blood.**—Living *cells* in the blood, either red or white. The red corpuscles are the means whereby oxygen is conveyed from the lungs to the tissues. They also assist in carrying *carbon dioxide* from the tissues to the lungs. The white corpuscles, also called *leucocytes* or *phagocytes*, serve to protect

the body by destroying harmful *bacteria* and other *septic* matter.

**Costiveness.**—*Abnormal* dryness and hardening of the *fæces*, causing constipation.

**Counter Irritant.**—Application that produces local inflammation, which may be superficial or deep according to the strength of the application used.

**Cranium.**—That part of the skull which contains the brain.

**Crepitus (bony).**—The grating produced by the rubbing together of the fragments at the seat of a fractured bone.

**Crisis.**—The turning-point in a disease. In fevers, it is usually accompanied by an abatement of symptoms and a rapid fall in the temperature.

**Cuticle.**—The epidermis or outer layer of the skin

**Cyst.**—Any bag-like structure containing liquid or semi-liquid matter

**Cystitis.**—Inflammation of the bladder.

**Defervescence.**—The period during which *fever* abates.

**Delirium.**—Temporary mental derangement caused by *fever*, injury or disease, and marked by restlessness, excitement and delusions.

**Dental.**—Pertaining to the teeth.

**Dermis.**—The true skin.

**Desquamation.**—Peeling of the skin, as in the later stages of scarlet fever.

**Diagnosis.**—The determination of the nature of a case of disease.

**Diaphragm.**—The muscular and membranous partition separating the *thorax* from the *abdomen*.

**Diphtheria.**—An *acute* infectious disease attended by *fever* and formation of membrane on the larynx and pharynx.

**Director.**—A grooved instrument to guide a knife in surgery. Often combined with an ear scoop, eye hook, etc.



**Distal.**—Furthest from the centre. Example: The distal side of a wounded blood-vessel is that away from the heart.

**Dorsal.**—Pertaining to the back of the body or of any part of it.

**Dorsal Vertebrae.**—Twelve vertebrae, which are placed between the cervical and the lumbar vertebrae.

**Drainage Tube.**—A tube to facilitate the escape of fluids from a wound. Material: India-rubber, vulcanite, glass. May be plain or perforated. Sizes: Smallest, 1; largest, 16.



**Dropsy.**—See (Edema).

**Duct.**—A tube for the passage of *excretions* or *secretions*.

**Duodenum.**—The first part of the small intestine. It extends from the *pylorus* to the *jejunum*.

**Effusion.**—A collection of fluid (serum) in a tissue, part or cavity.

**Emulsion.**—A milky liquid made by mixing oil or fat with water. This mixture is only possible by adding another substance which makes oil compatible with water. Oil or fat so treated is said to be emulsified.

**Endemic.**—Prevalent in a particular district.

**Enema (pl. Enemata).**—An injection of fluid into the *rectum*.

**Epidemic.**—Widely diffused, spreading rapidly and attacking many people.

**Epidermis.**—The cuticle, or outer layer of the skin.

**Epiglottis.**—The flap guarding the entrance to the *larynx*.

**Epilepsy.**—A disease of the brain, giving rise to insensibility with convulsions.

**Eruption.**—Breaking out. The stage in an eruptive disease when the rash appears.

**Eustachian Tube.**—The passage from the middle ear to the *pharynx* above the soft palate.

**Evaporation.**—The conversion of a liquid (or solid) into vapour.

The rate of evaporation of sweat from the skin depends—

1. **On the rate at which sweat is secreted.**—A certain, usually imperceptible, amount of perspiration is always going on. It is largely increased when the sympathetic nerve centre learns that the body is getting too hot, because messages are then at once sent by the nerves controlling the sweat glands causing them to increase their activity. As the body cools, these orders are countermanded and the activity of the sweat glands is decreased.
2. **On the dryness of the air,** as the less water vapour it contains, the more it can take up.
3. **On the temperature of the air,** as the hotter the air is, the more water vapour it can take up before it becomes saturated, that is to say, before it has taken up all the water vapour it can hold. For this reason a fire dries the air

in a room, not by decreasing the amount of water vapour present, but by warming the air and so increasing its capacity to take up more water vapour.

4. **On the movement of the air.**—If the air around the body were stagnant it would soon become saturated, but when there is movement, the moist air is constantly passing away and drier air taking its place.

**Excrete.**—To separate and discharge waste matter from the body.

**Excretion.**—The waste matter ejected from the body.

**Excretory Organs.**—The organs of the body that separate and discharge the waste matter from the body—kidneys, skin and lungs.

**Expectoration.**—Any matter discharged from the air passages by spitting. *Sputum*.

**Fæces.**—The excretion from the bowel.

**Fat.**—A substance containing carbon, hydrogen and oxygen, but the hydrogen is more than twice as much as the oxygen, and therefore the whole of it does not combine with the oxygen to form water. Fats and oils are hydro-carbons. (Cp. Carbohydrates).

**Febrile.**—Feverish.

**Femur.**—The thigh bone.

**Fever.**—A *morbid* condition, characterized by marked increase in temperature, quickened pulse, wastage of *tissue*, restlessness, and frequently delirium.

**Fibrin.**—A substance in the *plasma* of the blood, which, when blood escapes from a blood-vessel, forms a network to ensnare the blood corpuscles and so makes a clot.

**Fibula.**—The smaller of the two bones of the leg.

**Flatulence.**—A condition arising from the collection

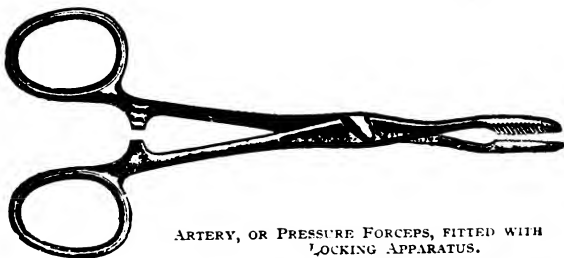


of gases in the bowels arising usually from undigested food. Wind

**Fomentation.**—A hot, moist local application, which may be medicated.

**Fomites.**—Any substances that carry infection.

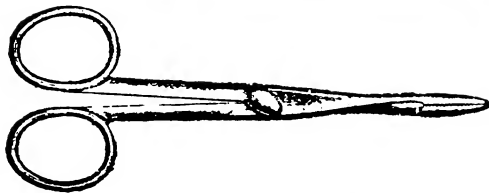
**Forceps.**—An instrument used for grasping.



ARTERY, OR PRESSURE FORCEPS, FITTED WITH  
LOCKING APPARATUS.



SPRING DRESSING OR DISSECTING FORCEPS.



BOW DRESSING FORCEPS.

**Gall-bladder.**—The reservoir for the storage of *bile* (gall) situated below the liver.

**Ganglion (pl. Ganglia).**—Any mass of grey nervous substance that serves as a nerve centre.

**Gangrene.**—Death of a part of the body.

**Gastric.**—Pertaining to the stomach.

**Germ.**—See Bacterium.

**Germicide.**—That which destroys germs. A true disinfectant.

**Gland.**—An organ for the *secretion* of fluid from the blood.

**Glottis.**—The opening into the larynx.

**Granulations.**—The small projections of newly formed tissue seen in a wound.

**Gullet.**—The canal descending behind the windpipe from the *pharynx* to the *stomach*. The *œsophagus*.

**Hæmoglobin.**—The colouring matter of the red *corpuscles* of the blood. It freely absorbs *oxygen*, and when charged with that gas it is known as *oxyhæmoglobin*.

**Hæmorrhoids.**—Dilated veins in the rectum, causing a tumour liable to bleed. Piles.

**Heart.**—A hollow muscular organ which maintains the circulation of the blood. It lies obliquely within the *thorax*, with the greater part of its bulk to the left of the middle line. It is divided into the right and left sides, in each of which there are two chambers—an auricle and a ventricle. The former serves to receive blood from the veins and to pass it on to the ventricle, which propels it through arteries. The right side is concerned with venous blood and the left side with arterial blood. The heart is contained in a loosely fitting sac, the pericardium. It beats in a healthy adult about seventy-two times a minute, more quickly in children, and more slowly in persons of

advanced age. The beat may be felt just below and to the inner side of the left nipple.

**Heat.**—A form of energy which, when communicated to a substance, either—

- a. Adds to the Temperature of the substance, and thus becomes apparent to the senses.
- b. Is absorbed by the substance as Latent Heat, without increasing its temperature.
- c. Passes through the substance as Radiant Heat.
- d. Is reflected.

The **Unit of Heat** is a **Calorie**, which is the amount of heat required to raise the temperature of a given quantity of water  $1^{\circ}$  Centigrade. The quantity of water should be stated, *e.g.*, Gramme-calorie (the amount of heat required to raise 1 gramme of water  $1^{\circ}$  C.), Kilogramme-calorie, Pound-calorie, etc.

**Hemiplegia.**—Paralysis of one side of the body.

**Hernia.**—Rupture. The protrusion of part of the intestine through the abdominal wall, usually at the groin.

**Hospital Etiquette** (Rules of)—

1. Rise when a superior officer enters the ward.
2. Never address a superior officer when at a distance from him or her.
3. Maintain a professional attitude to all doctors on their visits to the wards, even though you know them well socially.
4. Never talk on the staircase or in the corridors.
5. Never discuss an order in the presence of those affected by it.
6. Never discuss a patient's ailment or treatment in his presence.

**Humerus.**—The arm-bone.

**Hydrocarbons.**—See Fats. (Cp. Carbohydrates).

**Hydrogen.**—A very light invisible and combustible gas. It forms in chemical combination with oxygen two-thirds of the volume of water.

**Ileum.**—Part of the small intestine. It extends from the *jejunum* to the *cæcum*.

**Incubation.**—The period in an infectious disease during which the *bacteria* are developing and establishing themselves.

**Infection.**—The introduction to the body of disease-producing *bacteria* in circumstances favourable to their growth; also called contagion.

**Inferior.**—Lower.

**Inguinal.**—Pertaining to the groin.

**Inflammation.**—A condition caused by the reaction of *tissues* to irritation. Usually characterized by pain, heat, redness and swelling.

**Inoculate.**—To introduce through the skin a *vaccine* or *serum* to cure or prevent infectious disease.

**Insufflation.**—Blowing powder or vapour into a cavity of the body.

**Intestine.**—That part of the alimentary canal which extends from the *stomach* to the *anus*. It consists of the small intestine, which is about twenty-two feet long, and includes the *duodenum*, *jejunum* and *ileum*, and the large intestine, which is about five feet long, includes the *cæcum*, *colon* and *rectum*. The bowels.

**Invasion.**—The onset of disease. The bacteria, having established themselves in the body, become aggressive and produce the characteristic symptoms of the disease.

**Iris.**—The coloured membrane of the eye surrounding the pupil.

**Jaconet.**—A fine cotton cloth, proofed on one side. It is placed over dressings to keep them moist and to retain heat.

**Jejunum.**—Part of the small *intestine*. It extends from the *duodenum* to the *ileum*.

**Joint.**—Where two or more bones meet. An articulation.

**Kidneys.**—Two *organs* situate one on each side of the back of the abdomen, in front of the lumbar vertebræ. Their function is to *secrete urine*.

**Lact-albumen.**—One of the *proteins* found in milk.

**Lacteal.**—Any one of the *lymphatics* in the wall of the small intestine that take up *chyle*.

**Lactose.**—The sugar present in milk.

**Larynx.**—The voice-box. It is situated at the top of the windpipe and below the root of the tongue. Its entrance is guarded by the *epiglottis*.

**Lateral.**—Pertaining to the side.

**Lesion.**—An injury. A morbid change in a tissue or organ.

**Leucocytes.**—White blood corpuscles.

**Ligature.**—A thread used for tying a blood-vessel.

**Liver.**—The largest glandular organ in the body. It is situated to the right of the upper part of the abdomen. Its functions are (1) To *secrete bile*. (2) To convert sugar secreted from the *capillaries* passing through it from the portal vein into glycogen, and store it for return to the blood as sugar when required. (3) To convert nitrogenous matters accumulated in the *alimentary* canal into *urea*. (4) To take part in the formation and destruction of blood *corpuscles*.

**Loin.**—The part of the back between the thorax and the pelvis.

**Lumbar.**—Pertaining to the loin.

**Lungs.**—The organs of respiration. They are situated one on each side of the thorax. Each is enclosed in a double envelope called the *pleura*, and consists of a number of air tubes arising from one of the bronchi

(branches of the windpipe), and terminating in air cells (alveoli) surrounded by a network of capillaries.

The total capacity of the lungs of an adult is about 330 cubic inches.

	Cubic inches
In ordinary breathing there remains in the lungs after expiration <b>Stationary Air</b> ..	200
At each ordinary inspiration is drawn in <b>Tidal Air</b> about $\frac{1}{2}$ -pint, or ..	20 to 30
By a deep inspiration further air— <b>Complemental Air</b> —can be drawn in ..	100
	<hr/>
Total about $9\frac{1}{2}$ pints, or	330
	<hr/>

After each deep respiration the next expiration forces out—

<b>Complemental Air</b> (in ordinary inspiration not taken in, and therefore not forced out at the next expiration) ..	100	Cubic inches
<b>Tidal Air</b> .. .. .	20 to 30	
	<hr/>	130
By forced expiration further air— <b>Supplemental Air</b> —can be forced out ..	100	
Leaving <b>Residual Air</b> which cannot be forced out .. .. .	100	
	<hr/>	
Total ..	330	
	<hr/>	

**Lymph.**—A fluid which escapes from the blood through the walls of *capillaries* into spaces in the tissues and there serves to bathe and nourish the *cells*. Some of it leaves the body in the form of sweat, and the remainder passes into vessels known as lymphatics.

which convey it to the back of the abdominal cavity, whence it is carried either direct or by the *Thoracic Duct* to the veins.

**Lymphatic.**—A vessel conveying *lymph*.

**Lysis.**—The gradual abatement of symptoms of fever. (Cp. Crisis.)

**Malaria.**—An intermittent fever due to a germ which is introduced into the body by the bite of a mosquito. Prevalent in marshy districts.

**Maxilla.**—A jaw-bone.

**Medulla Oblongata.**—See Brain.

**Membrane.**—A thin texture, such as covers the organs, or lines the cavities or vessels of the body.

**Meninges.**—*Membranes* covering the brain and *spina cord*.

**Meningitis.**—Inflammation of the *meninges*.

**Metabolism.**—A general term to include the chemical changes which take place in living tissues.

**Metacarpus.**—Five bones in the palm of the hand extending from the *carpus* to the *phalanges*.

**Metatarsus.**—The part of the foot with its five metatarsal bones between the *tarsus* and the *phalanges*.

**Metric System of Weights and Measures.**—The following information will, as a rule, be sufficient for the Home Nurse:—

#### WEIGHTS.

1000 Milligrammes	=	1 Gramme.
1000 Grammes	..	= 1 Kilogramme.

#### Approximately—

1 Gramme	..	15½ Grains.
1 Kilogramme	=	2 lbs. 3 ozs.
1 Grain	..	= 65 Milligrammes.
1 Oz.	..	= 28½ Grammes.

## FLUID MEASURES.

1000 Cubic Centimetres (c.c.) = 1 Litre.

## Approximately—

1 c.c.	..	=	17 Minims
1 Litre	..	=	1 $\frac{1}{4}$ Pints.
1 Fluid ounce	..	=	28 $\frac{1}{4}$ c.cs.
1 Gallon	..	=	4 $\frac{1}{2}$ Litres.
3 $\frac{1}{2}$ Fluid ounces	..	=	100 c.cs.

## MEASURES OF LENGTH.

1000 Millimetres = 1 Metre (100 Centimetres).

1000 Metres .. 1 Kilometre.

## Approximately—

1 Metre	..	=	39 $\frac{1}{2}$ Inches.
1 Kilometre	..	=	5 Furlongs.
1 Inch	..	=	25 Millimetres.
1 Mile	..	=	1 $\frac{3}{4}$ Kilometres.

**Microbe.**—A germ. See Bacterium.**Micro-organism.**—Minute bodies only discernible through a microscope. A germ. See Bacterium.**Mistura (mist.).**—A mixture.**Mixture, Mechanical.**—Two or more substances merely mixed together without any change of their properties being effected.**Morbid.**—Diseased.**Mucilage.**—Gum.**Mucus.**—A slimy fluid *secreted* by the lining of the various channels of the body which communicate with the outside—the mucous membranes.**Muscle.**—The red flesh. An organ which by contraction produces movement. **Striated or striped muscles** are those in which contraction is under the



influence of the will ; also the heart muscle. **Unstriated muscles** are those in which the contractions are involuntary (the heart muscle excepted).

**Nasal.**—Pertaining to the nose.

**Needle.**—Straight (Fig. A). Half curved (Fig. B). Full curved (Fig. C). Sizes : largest 1, smallest 30.



FIG. A.



FIG. B.



FIG. C.

**Needle Holder.**—An instrument for firmly grasping a needle during use.



**Nephritis.**—Inflammation of one or both of the kidneys.

**Nerve.**—A pearly white cord-like structure for the conveyance of impulses. **Motor nerves** carry impulses from the nerve centres (brain, spinal cord, and sympathetic *ganglia*) to muscles, thereby causing movement. Sensory nerves carry impressions to the nerve centres.

**Nitrogen.**—An invisible gas which can neither be burnt nor support combustion. In *mechanical mixture* with oxygen and small quantities of other gases it forms about four-fifths of the volume of air.

**Œdema.**—Dropsy. An *effusion* of serum into the deeper layers of the skin.

**Œsophagus.**—The canal which conveys food from the *pharynx* to the stomach. The *gullet*.

**Ophthalmic.**—Pertaining to the eye.

**Oral.**—Pertaining to the mouth.

**Organ.**—Any part of the body which performs a special function. For example—the heart, eye, liver, etc.

**Organic.**—Pertaining to an organ or organs.

**Osmosis.**—The mingling of fluids separated from each other by a *membrane* or other porous partition.

**Oxidation.**—Entering into chemical combination with oxygen.

**Oxygen.**—An invisible gas. It cannot be burnt, but it supports combustion and is essential to the maintenance of life. In chemical combination with hydrogen it forms one-third of the volume of water, and, in mixture with nitrogen and small quantities of other gases, it forms about one-fifth of the volume of air.

**Oxyhæmoglobin.** — *Hæmoglobin* charged with oxygen.

**Palate.**—The partition separating the nose from the mouth. The front, bony portion forms the roof of the mouth. The soft palate is the curtain attached to the back of the hard palate looped in the centre to form the *uvula*.

**Pancreas.**—A large gland situate below the stomach. It secretes pancreatic juice to aid digestion.

**Paralysis.**—Total or partial loss of the power of muscular contraction or of sensation in the whole or part of the body.

**Pasteurization.**—A process to render milk free from micro-organisms by keeping it at a temperature

between 145° F. and 150° F. for thirty minutes and then rapidly cooling it.

**Pathogenic.**—Disease-producing.

**Pathology.**—The science dealing with the nature and causes of disease.

**Pelvis.**—The bony basin-shaped ring formed by the two haunch bones, the *sacrum* and *coccyx*. The haunch bones meet in front at the pubes, but at the back the *sacrum* is placed between them. The pelvis serves to support the trunk and affords sockets for the heads of the thigh bones. The cavity of the pelvis contains the *bladder*, the *rectum* and, in females, the womb.

**Penis.**—The male genital organ.

**Pepsin.**—A ferment found in the *gastric* juice, which aids in the digestion of *proteins* by converting them to peptones.

**Peptone.**—A *protein* which has been subjected to the action of pepsin.

**Peptonize.**—To convert a *protein* into *peptone*.

**Pericarditis.**—Inflammation of the *pericardium*.

**Pericardium.**—The sac in which the heart is enclosed.

**Perineum.**—The space between the anus and the genital organs.

**Peristalsis.**—An involuntary wave of worm-like contraction of the muscular coat of the alimentary canal, causing the passage of its contents.

**Peritoneum.**—The *membrane* lining the *abdomen* and covering several of its organs.

**Peritonitis.**—Inflammation of the *peritoneum*.

**Phagocyte.**—Any cell that absorbs and destroys harmful germs. Phagocytes are found as white corpuscles in the blood, when they are known as leucocytes, or they may be fixed to tissue.

**Phalanx** (pl. **Phalanges**).—Any one of the bones of a finger or toe.

**Pharynx**.—The back part of the throat; it forms the upper part of the gullet.

**Phlebitis**.—Inflammation of a vein.

**Phlegm**.—Expectoration. See *Sputum*.

**Phthisis**.—Consumption. *Tuberculous* disease of the lungs.

**Physics**.—The science dealing with the properties of matter due to its form—size, weight, heat, hardness, etc. Matter may be in the form of a solid, a liquid, or a gas, and the change from one of these forms to another is a physical change.

**Physiology**.—The science dealing with the functions of the organs and parts of the body.

**Plasma**.—The watery part of blood in which the *corpuscles* float. When deprived of its *fibrin* it becomes *serum*.

**Pleura** (pl. **Pleuræ**).—Each of the two pleuræ is a double membrane, the inner fold of which adheres to and encloses a lung, while part of the outer fold is attached to and lines the walls of one side of the *thorax*, and the remainder serves to separate that cavity into compartments. In health the two folds, except for a little lubricating fluid, touch each other, but are not connected except near the spine, where they join to assist in attaching the lung to the *thoracic* wall.

**Pleurisy**.—A disease characterized by inflammation of one or both of the *pleuræ*.

**Pneumonia**.—Inflammation of the lungs.

**Popliteal**.—Pertaining to the back of the knee.

**Posterior**.—Situated behind.

**Posture**.—The position assumed by the patient.

**Probe.**—A slender instrument for introduction into a wound or part for purposes of exploration or the introduction of thread, packing, etc.

**Prophylactic.**—Tending to ward off disease.

**Protei** .—An animal or vegetable substance, containing carbon, hydrogen, oxygen, and nitrogen. Proteins are contained in lean meat, white of an egg, the pulses beans, peas, lentils, etc.), milk and many other forms of food.

**Proximal.**—Nearest the centre. Example: The proximal side of a wounded blood-vessel is that towards the heart.

**Pulmonary.**—Pertaining to the lungs.

**Purgative.**—Having the property of clearing or evacuating the intestines. See *aperient*.

**Pus.**—A thickish fluid frequently produced during inflammation.

**Pustule.**—A small eruption (vesicle) on the skin containing pus.

**Pylorus.**—The junction of the stomach with the small intestine.

**Pyogenic.**—*Pus* forming.

**Pyrexia.**—A *febrile* condition.

**Radial.**—Pertaining to the radius.

**Radius.**—The bone of the forearm on the thumb side.

**Rectum.**—The lowest part of the large intestine.

**Respiration.**—The act of breathing.

**Ribs.**—Any one of the twelve pairs of bones which extend from the *dorsal vertebræ* to or towards the *sternum*. **False ribs**: The lower five pairs; they are not directly connected with the sternum. **Floating ribs**: The lowest two pairs, which are attached only to the vertebræ. **True ribs**: The upper seven pairs, directly attached to the vertebræ and the sternum.

**Rigor.**—A shivering fit.

**Sacrum.**—Part of the *spinal column*, formed of five *vertebræ*, united in adults. It lies between the haunch bones.

**Saliva.**—An alkaline secretion from the salivary glands into the mouth. It has the property of turning starch into sugar; it moistens food and so assists mastication.

**Salivary Glands.**—The organs in the mouth that secrete the saliva. They are—

Par tid, situated in front of the ear.

Sublingual, situated under the tongue.

Submaxillary, situated under the lower jaw.

**Salt.**—Any chemical compound formed by the combination of an acid or acid gas with an alkali or metal. Common salt and common soda are amongst the most frequent examples.

**Saponify.**—To convert or to become converted into soap.

**Saturated.**—Incapable of holding in solution any more of a given substance.

**Saturated Steam.**—The vapour of water which has not been heated after it has left the water. Moist steam.

**Scalpel.**—A surgical knife with a convex cutting edge.



**Scapula.**—The shoulder blade.

**Scrotum.**—The pouch situated behind the *penis* containing the testicles.

**Secretion.**—The separation of a substance from a circulating fluid such as the blood. Also the substance so separated ; for example, *sweat, saliva, bile*, etc.

**Sepsis.**—Condition of putrefaction.

**Septic.**—Conducive or due to putrefaction.

**Septicæmia.**—Blood-poisoning due to *pathogenic bacteria* and their *toxins*.

**Serum.**—A colourless fluid which separates from a clot of blood. It is *plasma* deprived of its *fibrin*. The serum of animals previously inoculated with *bacteria* or their *toxins* is used to inoculate human beings, to render them immune to certain infectious diseases.

**Skeleton.**—The framework of the body.

**Skull.**—The bony framework of the head ; it consists of twenty-two bones—eight of the cranium and fourteen of the face.

**Slough.**—Dead tissues separating from a living part. Usually found in septic wounds and abscesses. The "core" of a boil is an example of a slough.

**Spasm.**—A rigid muscular contraction. (See *Convulsion*.)

**Spatula.**—A flat instrument used for mixing ointments, spreading poultices or holding down the tongue, etc.



**Splanchnic.**—Pertaining to the *viscera*.

**Spinal Canal.**—A cavity enclosed by the processes of the *vertebræ*. It extends the whole length of the spine and contains the *spinal cord*.

**Spinal Cord.**—The cord-like structure contained in the spinal canal. It is continuous through an opening

in the base of the skull with part of the *arbin*, the *medulla oblongata*, and reaches to the second *lumbar vertebra*. Thirty-one pairs of nerves branch off from it, and so impulses between the brain and various parts and organs of the body are conveyed. It is, moreover, the centre for certain nerve impulses.

**Spleen.**—An organ placed to the left of the upper part of the *abdomen*. Its functions have not been definitely determined, but it undoubtedly has much to do with the destruction of effete red blood corpuscles and probably with their production.

**Sporadic.**—Occurring in a few cases; the opposite to *epidemic*.

**Spores.**—Minute organic bodies that will develop into new individuals under favouring circumstances.

**Sputum.**—The substance that is expectorated.

**Sterile.**—Containing no living germs. Aseptic.

**Sterilize.**—To kill germs by physical means. The usual methods are : (1) By boiling the infected article for twenty minutes; (2) By exposing the infected articles to moist heat in the form of steam raised from water boiled under pressure of 15 pounds.

**Sternum.**—The dagger-shaped bone in front of the thorax. The breast bone.

**Stertor.**—Breathing accompanied by a noise like snoring.

**Stomach.**—An enlargement of the digestive tract, connected at its *cardiac* end with the *gullet*, and at the *pylorus* with the small intestine. It is situated in front of the abdomen, just below the diaphragm, rather more to the left than the right side.

**Stupe.**—A compress of flannel or other soft material used as a fomentation. To increase the effect, it is often sprinkled with a few drops of Turpentine. "Turpentine Stupe."



**Stupor.**—Insensibility, more or less complete. The patient can frequently be aroused, or the unconsciousness may deepen into *coma* (q.v.).

**Styptic.**—An astringent. Used to stop slight bleeding. Alum and tannic acid are examples, but the use of styptics is not recommended.

**Subcutaneous.**—Beneath the skin.

**Superheated Steam.**—The vapour of water heated after it has left the water. Dry steam.

**Superior.**—Upper.

**Suppuration.**—The formation of *pus*.

**Suture.**—A surgical stitch, may be of catgut, silk, horsehair, silver wire, etc.

**Swab.**—A piece of sterilized wool or gauze.

**Sweat.**—A clear liquid *secreted* from the tissues and exuded from the pores of the skin. Perspiration. (See *Evaporation*.)

**Syncope.**—Fainting.

**Synovia or Synovial Fluid.**—An oily fluid secreted by the synovial membrane to lubricate movable joints.

**Tarsus.**—The part of the foot below the bones of the leg, consisting of seven bones which form with the *metatarsal* bones the arch of the foot.

**Tetanus.**—An *acute* disease, due to a *bacillus* (see *Bacterium*), accompanied by persistent muscular contraction, usually in the neighbourhood of the jaw.

**Thermometer.**—An instrument for measuring temperature. Centigrade (C.): Freezing point of water, 0°; boiling point, 100° Fahrenheit (F. or Fahr.): Freezing point of water, 32°; boiling point, 212°. To convert degrees Centigrade into degrees Fahrenheit multiply by 9, divide by 5, and add 32—

Example: 50° C.  $\times 9 = 450$ ;  $450 \div 5 = 90 + 32 = 122^\circ$  F.

To convert degrees Fahrenheit into degrees Centigrade subtract 32, multiply by 5, and divide by 9—

Example :  $50^{\circ} \text{ F.} - 32 = 18 \times 5 = 90 \div 9 = 10^{\circ} \text{ C.}$

**Thoracic.**—Pertaining to the chest.

**Thoracic Duct.**—The channel for the transmission of *lymph* and *chyle* from the parts of the body below the diaphragm, and lymph from the left side of the body above the diaphragm. It ascends from the chyle receptacle in the abdomen to empty itself into large veins at the left side of the root of the neck.

**Thorax.**—The cavity between the neck and the abdomen. The chest.

**Tibia.**—The shin-bone.

**Tissue.**—The substance of which the *organs* and other parts of the body are formed. The muscular, bony and nervous tissues are examples. All tissues are composed of *cells*, and differ from each other according to the nature and arrangement of the cells.

**Tonsil.**—Either of the two glands situated at the back of the mouth, one on each side of the entrance to the pharynx.

**Tonsillitis.**—Inflammation of one or both tonsils.

**Toxin.**—Poison produced by the action of *bacteria*.

**Trachea.**—The tube descending from the *larynx* to the *bronchi*. The wind-pipe.

**Tubercle.**—(1) A granular non-vascular tumour formed within the substance of an organ due to morbid action set up by the tubercle bacillus. (2) The bacillus that tends to set up tuberculosis.

**Tuberculosis.**—A disease affecting various organs, produced by the tubercle *bacillus*.

**Ulcer.**—An open sore.

**Ulceration.**—The formation of an open sore accompanied by the secretion of pus or other discharge.

**Ulna.**—The bone of the forearm on the little finger side.

**Umbilicus.**—The navel.

**Urea.**—A nitrogenous waste product of *metabolism*. It is *secreted* from the blood by the *kidneys*, to be *excreted* as part of the *urine*.

**Ureter.**—The tube which conveys urine from a kidney to the bladder.

**Urethra.**—The passage for the excretion of urine from the bladder.

**Urine.**—The fluid secreted from the blood by the *kidneys*. It passes by the *ureters* to the *bladder*, where it is stored, to be periodically discharged through the *urethra*. The normal discharge of urine is interfered with as follows :—

**In Retention**, though the bladder is full, no urine is passed, and the patient suffers pain and discomfort.

**In Suppression**, no urine is passed because the kidneys are not acting, and the bladder is therefore empty, but there is no pain at all.

**In Incontinence**, the patient's bladder involuntarily empties itself either at intervals of four to six hours, or by a continuous dribbling. There is no pain.

**In Retention with Dribbling** pain is felt.

**Uterus.**—The womb.

**Uvula.**—The small cone of flesh hanging from the soft *palate* above the root of the tongue.

**Vaccine.**—A preparation of a **bacterium** or its *toxins* for introduction into the body as a preventive of a specific disease.

↳ **Vagina.**—The passage to the womb.

↳ **Vein.**—Any one of the vessels that carry blood from the capillaries to the heart.

**Venæ Cavæ.**—The two great trunk veins of the body, which carry blood to the right auricle of the heart. The Inferior vena cava collects the blood from the veins of the lower part of the body, and the Superior vena cava collects it from the veins of the upper part.

**Vertebra (pl. Vertebrae).**—Any one of the thirty-three bones of the spinal column. Each vertebra consists of (1) A front body. (2) Processes projecting backwards, which enclose the spinal canal through which runs the spinal cord. (3) A pair of transverse processes, which in the dorsal vertebra support the ribs. (4) A spinous process, which projects downwards and backwards behind the spinal canal. **Cervical V.** The seven vertebrae of the neck. **Coccygeal V.** The lowest four vertebrae which are united to form the coccyx. **Dorsal V.** The twelve vertebrae at the back of the *thorax*, and which support the ribs. **Lumbar V.** The five vertebrae between the dorsal vertebrae and the sacrum. **Sacral V.** The five vertebrae united in adults which form the sacrum.

**Vesicle.**—A small bleb or cavity containing serum (Cp. Pustule.)

**Viscus (pl. Viscera).**—Any one of the large internal organs.

**Vitamins.**—Accessory food elements. Their nature and chemical composition are not exactly known at present, but their absence from diet causes "deficiency diseases," such as Rickets, Scurvy, etc.

**X-rays.**—Rays of electricity used for seeing or photographing bones and foreign bodies through the flesh.

**Zymosis.**—Fermentation. The development of an infectious disease due to the development of *bacteria* and their *toxins*. Such diseases are called zymotic.

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